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16 January 1981

**USSR REPORT  
MILITARY AFFAIRS  
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**Moscow AVIATSIIA I KOSMONAVTIKA in Russian Nos 12, 1979; 1, 2, 3, 1980**

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## BETTER TRAINING METHODS FOR FLIGHT INSTRUCTORS URGED

Moscow AVIATSIYA I KOSMONAVTIKA in Russian No 12, 1979 pp 1-3

[Article by Col Gen Avn V. Reshetnikov, Hero of the Soviet Union and Honored Military Pilot of the USSR: "The Educational Skills of an Air Commander"]

[Text] A new training year has begun in the Air Force units and formations. The military aviators are hard at work carrying out the missions of combat and political training and carrying out the socialist obligations assumed in honor of the 110th birthday of the leader of the Communist Party and the founder of the world's first socialist state, V. I. Lenin.

During the past training year, the aviators achieved a further improvement in flying and firing skills and in the uniting of the military collectives. There was a rise in the number of class specialists and outstanding crews and subunits, and there were noticeable successes in further shortening the times required to bring the units to combat readiness. These results show that the Air Force personnel, like all the armed defenders of our motherland, have done great work to carry out the military and political training plans, to seek out unused reserves and introduce the most effective troop training and indoctrination methods into practice. At the same time, analysis indicates that the resources are far from depleted and if they are skillfully used, they can provide a tangible increase in the combat skill of the military aviators and improve their flight abilities.

The tasks which must be carried out by the air commanders, the staffs, the political bodies and all the aviators are becoming more complicated every year. It could not be otherwise, for what was achieved yesterday is only the next step, a platform for a new ascent to the heights of professional mastery.

The flight personnel must further master the new aviation equipment and utilize its combat capabilities in the entire range of flight altitudes and speeds, under various weather conditions, during the daytime and at night.

An important and, it can be said, decisive factor which determines the successful mastery of the military equipment and weapons by flight personnel is the procedural training of the air commanders who by right and by duty should teach subordinates everything that is required for the dependable defense of the peaceful skies of the motherland.

High demands have always been and are being made on the educational skills of the air commanders. This is due to the constant development of military affairs, to the improvement in aviation equipment and weapons, the means of support and control, and to the greater role played by man in modern combat. With the existing air defense system, with its powerful means of detection, electronic countermeasures and weapons, a defended installation can be reached and decisively attacked only by a well-trained crew which is totally loyal to the cause of the party and the people and which is united by a unity of will and a desire to achieve victory over the enemy.

In order to train subordinates, an air commander should have a clear understanding of what is to be taught and how, that is, have profound knowledge of the subject and a definite range of procedural skills which provide a maximum positive impact under the specific training conditions. As an example, while a certain method may be fully applicable for one pilot, this in no way means that it is fully suitable for another. In each instance an individual approach is required. Moreover, the teacher must be a tactful pedagogue and an understanding psychologist.

The history of our aviation and many years of flight training practices have left us a heritage of a mass of fine educational procedures. Many generations of fliers have followed one another, but the golden pedagogical rule of "Do Like I" lives at present. Moreover, it has been enriched and demands from the aviation commanders a profound knowledge of the equipment and its operating instructions, the ability to effectively utilize all the equipment, to be disciplined and efficient, and to combine great exactingness for subordinates with benevolence and concern for them. In order to have the moral right to teach people and to lead them, it is absolutely essential for a commander to skillfully pilot an aircraft under all conditions, to hit targets under any situation, and to be able to describe and demonstrate in practice how this must be done. For this reason the well-known formula of "equipment--aerodynamics--tactics" takes on a special meaning for the instructors as they must know much more than the trainees. And for this it is essential to constantly add to the amount of their knowledge and skills, and seek out new, more effective training methods.

In our times, independent work to deepen one's knowledge has been recognized as one of the most effective training methods. In actuality, the fliers and navigators have a higher engineering education and good theoretical training. Consequently, they are capable themselves of studying the flight mission, working through the necessary aids, and making calculations. However, as experience indicates, certain young aviators have still not fully mastered the work procedures with training literature, they are not always able to sufficiently prepare for the flights independently, and in an inspection show poor knowledge. The immediate duty of a flight or detachment commander is to teach subordinates in correctly allocating attention and time in preliminary preparations, and help them in determining the main thing on which basic efforts must be focused at the given moment.

In the training practices for air fighters, the method of in-air description and demonstration has proven effective. In describing, the instructor adds necessary details to the knowledge of the trainee which he has gained from the literature; he explains the particular features of operating the cabin equipment in carrying out one or another flight element; he points out where and at what moment a problem can arise and what must be done if it occurs. It is very important that the

instructor's description does not run counter to the documents regulating flying, and the demonstration corresponds to what has been said. The strength of such an educational procedure is in the unity of word and actions.

In this regard, the following instance comes to mind. The detachment commander, Capt A. Nikitin, was training from the instructor's seat. In two landings, he made significant overshoots. The very fact of an overshoot showed that the pilot was not correctly allocating his attention in the landing. If one considers the enormous weight of the aircraft, its inertia, it is clear what the consequences could be if the aircraft would roll beyond the runway.

Consequently, such shortcomings could not help but be commented on. And the experienced air commander, Lt Col G. Treznyuk, who himself expertly pilots his combat aircraft, did not skip over the pilot's mistakes. He talked frankly with Nikitin and the squadron commander, Capt V. Rumyantsev, who had trained him, and discovered that in the pilot training process, an obvious procedural mistake had been made. The problem was that at one time Capt Rumyantsev himself had not been taught to correctly allocate his attention from the instructor's seat. Quite naturally, he could not teach his subordinate to do this.

Measures had to be taken. Lt Col Treznyuk conducted additional exercises with the officers, and then in the air demonstrated to the instructor commanders how to correctly allocate attention and operate the controls on the descent glide and landing. Thus, the flaw in the procedural training of the instructors was eliminated.

In order to arm all air commanders with correct training proceedings, and in order to give them scientifically-based procedures and methods for passing on their knowledge and skills to subordinates, the commanders, the political workers and the members of the educational methods council must constantly study their personal features, follow the growth of professional skills and forecast their development as commanders.

This work, to be frank, is not easy and demands from the officer leaders great patience, restraint, and high competence on the questions of military pedagogics and psychology, tenacity and loyalty to party principles in achieving the set goals, and the bold introduction of new, effective procedures into training practices. As an illustration, let us turn again to the experience of the aviation unit commanded by Lt Col Treznyuk.

In order to obtain a full notion of the course of combat training for the personnel, here, upon the commander's proposal, they widely use the method of mathematical analysis of executed flights. On a chart digital data are accumulated obtained on the basis of the results from decoding the objective monitoring equipment. At the end of the month, using the theory of random values, the educational methods council makes an analysis of the data, the maximum deviations are calculated, and the ways are outlined for eliminating the factors which give rise to incorrect actions in the air. Measures are worked out ahead of time to prevent errors. Life has affirmed the great effectiveness of such forecasting and its value in preventing potential causes of accidents.

Here great attention is also given to organizing flight analyses. A well thought out and carefully organized analysis is a true school for educational mastery of the

inferior-level aviation commanders. At them the young commanders are taught to give tight and complete reports and correct conclusions on the basis of analyzing the observations and the objective monitoring data. This provides an opportunity to teach the commanders to correctly assess the actions of the crew in the air, to determine the level of its air and firing skills, and to adjust further preparations.

Unfortunately, not all the subunits have given a proper place to monitoring the executed missions using the in-flight recorders, wiring and other devices making it possible to recreate a picture of the flight and the actions of the crew on the ground and in the air. Obviously certain commanders feel that this question is too troublesome and occupies much time, and isn't it better to be more concerned with preliminary preparations. Here they forget the well-known truth that not everything that is simple is effective. Of course, it is easier to work in the old manner. However, practice shows that the person who adheres to such views inevitably suffers a failure. Any miscalculation in the methods can doom the aviators to incomplete training, and the incomplete training of an instructor-commander is a direct threat to flight safety.

The game method has provided great help to the crews in preparing for the flights. It, as a rule, is employed by the flight (detachment) commander. Thus, in the unit under discussion, the detachment commander, Maj V. Bondashev, was suggested to work out several variations for playing through the flights. The experienced pilot carried out the assignment well. He drew up cards for various typical missions with unannounced changes for special instances in the flight; there were questions concerning the crossing of air defense weapons and the indicating of aircraft limitations for various modes, and so forth.

Now such cards are used in the process of preliminary preparations, at the tactical quizzes and in supervising the readiness of all squadrons. In any situation the commander can vary them at his discretion and in terms of the pending mission. Here the main thing is that the flight personnel under the leadership of the detachment (flight) commanders, on the basis of several of the variations played through, learns how to seek out new tactical plans, and reinforces its knowledge of the equipment and weapons, the controls and the means of organizing cooperation.

In speaking about the modeling of flight practices, it is essential to mention that at present this is one of the effective methods for training the pilot, navigator and other crew members for flights, for giving them new missions and for reinforcing them in their memory. The air commanders must instruct their subordinates in correctly creating mathematical, graphic-analytical and logical models of the missions, in playing through them in their minds before the flight, and to act in the air in precise accord with the plan. This is a guarantee for the dependable and faultless actions of the crew in any stage of the flight.

In instructing flight personnel in the new procedures and methods of combat use, and in particular in shaping up young pilots, it is essential to remember that strict procedural sequence is the guarantee for the successful mastery of the program and for high flight safety. The desired results can be achieved only in moving from the simple elements to the complicated and by gradually putting the elements together. Unjustified forcing, without being firmly convinced that the pilot or navigator has firmly mastered and reinforced the acquired skills, is unacceptable.

Training sessions for the regular crews on special equipment, integrated trainers and in the aircraft cockpits are assuming ever-greater significance. There have been instances, when crew members who had a good knowledge of the mission and had been properly checked out did not carry it out in the air. The problem was that

before the mission, they did not train and did not have a feeling, so to speak, at their fingertips of what had to be done in the air. Experienced flight and detachment commanders as well as the crew commanders are constantly improving training methods, they complicate the forthcoming flight with various surprise situations, and develop clear and flawless operations, for they see this as the key to the successful outcome of any flight.

Expert educational skills for an aviation commander do not come spontaneously. They are the result of great painstaking work by the senior commanders and chiefs, by the members of the methods educational concil in generalizing, analyzing and disseminating advanced training and indoctrination procedures which practice gives us. It is essential to remember that a commander bears enormous responsibility to the Communist Party, the Soviet government and all our society for the complete and harmonious training of air fighters. A feeling of responsibility is probably the most significant indicator of the social, moral and commander maturity of an indoctrinator. It is not enough to teach a person to fly, to bomb or fire off rockets.... More is required, he must be a strong-willed, decisive, ideologically convinced, steadfast air fighter, a true patriot of his motherland and an internationalist soldier.

The Decree of the CPSU Central Committee "On Further Improving Ideological and Political Indoctrination Work" emphasized that the effectiveness of this work is achieved by a comprehensive approach to organizing the entire question of indoctrination, that is, by a close unity in the political, labor and moral indoctrination considering the particular features of the various groups of workers. This means that in the aviation units as well indoctrination should be carried out comprehensively, considering the missions being carried out by all personnel categories.

In further improving indoctrinational work, the party and Komsomol organizations have a great role to play. They must instill in the aviators high moral-combat qualities essential to the defenders of the armed frontiers of the fatherland and the entire socialist commonwealth, and they must ensure their social activeness. They also have a great role to play in organizing the socialist competition.

The successful development of politically and professionally well trained air fighters depends largely upon the trainees and upon their awareness and desire to achieve constant growth of their military skills. Success comes to those officers who are constantly and effectively concerned with their own education, whose every action is under strict self-control, and who improve discipline and efficiency. Experience shows that an officer never becomes a good indoctrinator-commander if he himself has not learned to carry out the orders and instructions of superiors precisely and without question. Professionalism and efficiency, high competence, discipline and a firm will, restraint and resourcefulness, loyalty to military duty and a constant desire to improve knowledge and skills--these are the traits which distinguish persons who are searching and who are true masters of their job.

The commanders of the units and subunits, the staff officers, the political workers, the members of the educational methods councils, and the party and Komsomol activists are showing unflagging attention to the procedural skills of the commanders and all instructor personnel, for each realizes that the prompt development of the air defenders of the socialist fatherland depends upon the skills of the air commanders.

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## PROBLEMS IN TRAINING OF HELICOPTER PERSONNEL REVIEWED

Moscow AVIATSIYA I KOSMONAVTIKA in Russian No 12, 1979 p 4

[Article by Maj V. Podarov, Military Pilot 1st Class: "Crew Navigator Day"]

[Text] When the discussion gets around to the training of pilot/navigators, one case always comes to mind. This was several years ago. The crew commander and the pilot/navigator Lt V. Sysoyev took off on a mission. The weather was good and it seemed that the flight would be successfully carried out. But some 40 minutes later low cloudiness appeared, and icing started. The crew commander decided to abort the mission and reported this to the control tower. Lt Sysoyev gave the heading back to the airfield. However, the commander doubted the correctness of the set heading. Some 2 minutes later he requested his position from the control tower, and then ordered that the automatic radio compass be set to the airfield homing. After these operations he ascertained that the course error had reached 90°. Due to the prompt correction, the crew reached the airfield and the flight ended safely.

In the analysis it became clear that the navigator in a difficult situation incorrectly positioned the map, and was in a hurry in determining the course and made an error. Moreover, he did not correctly use the various radio devices. What could have been the outcome of the error in the calculations? Obviously, at best, the loss of orientation and a forced landing outside the airfield.

This flight served as a good lesson to Sysoyev and also to many young aviators. The lieutenant could often be seen with a navigation textbook. The skills of the young officer gradually improved. Time passed and he was recognized as the best pilot/navigator in the squadron. At present Sysoyev has received a new assignment and has been promoted in rank.

Each year after the completing of higher military schools, a regiment receives pilots and navigators. The development of the young officers starts with a studying of the flight area, and then they take flight qualifying exams and are assigned to the squadrons. As a rule, even the first results of taking the exams, particularly for helicopter piloting, indicate that the navigational training of certain lieutenants leaves much to be desired.

I have repeatedly flown out on inspection flights with young pilot/navigators. The most frequently encountered mistakes include: insufficiently firm skills in visual orientation, in the integrated use of the on-board radio equipment for the purposes of helicopter piloting, and the delayed calculating of the navigational flight

elements. In truth, the young men gradually gain experience, they acquire the knowledge, ability and skills, and the mistakes disappear.

Careful ground training is integral to this success. It is conducted in a unit under the leadership of a senior navigator, and in the subunits under the leadership of the squadron and flight navigators.

For improving the professional skills of the pilot/navigators, we have a list of subjects for navigation for the year with one subject per month. The pilot/navigators study each subject, they outline it and turn in the work for grading to the squadron navigators who assess the quality of the work done. If necessary, recommendations and advice are given on how to improve the material. Moreover, navigation training exercises are conducted under the ground training plan.

For example, all the flight personnel studied the following subjects: "flights under special conditions," "breaking through cloudiness and the approach for landing under adverse meteorological conditions," and "determining the position of the helicopter using the on-board and ground radio equipment." As a rule, the exercises were conducted by the unit senior navigator. For the purpose of reinforcing the material, test questions are asked of the students. This helped in determining the degree to which the subject had been mastered and to bring out what was the greatest difficulty for the pilots.

Also effective as a form of instruction and improving professional competence was the ship commander day and ship navigator day. Usually the commander day is conducted with the pilots by the deputy regimental commander for flight training, and with the navigators by the unit senior navigator.

Since it is a question of the training of pilot/navigators, I will describe how navigator day was organized for the subject "carrying out flights in unmarked terrain and along airlanes." This was of great interest both for the experienced and new navigators. A briefing on "particular features of navigation in the Arctic and the operating conditions of magnetic compasses in the high latitudes" was given by the military sniper-navigator, Lt Col S. Gorskiy. The unit veteran who had great experience in flying under various conditions, told in detail and demonstrated in specific examples how the piloting and navigation equipment is to be used under special conditions. Then the most experienced squadron and flight navigators spoke on various questions of flight preparations. They gave the necessary recommendations and advice. The young navigators particularly remembered the comments of officers S. Vnukov, A. Pigalitsin and A. Borman who described their development as navigators. And it must be pointed out that everyone was interested. The young aviators asked many questions. Thus, ship navigator day provided great help in the professional training of the pilot/navigators.

The regularly held navigator quizzes are also effective. They examine such questions as calculating the indicated safe altitude with the setting of different pressures on the altimeter scale, a knowledge of the flight zone and the natural and man-made obstacles. The exercises are usually conducted by the squadron navigators. Here the young officers learn to make the calculations promptly and accurately, and this is done not by learning the formulas by rote but rather by a profound understanding of their sense.

The collective where Officer M. Grabovskiy is the squadron navigator has achieved good successes in training the young fliers. Here the pilot/navigators more rapidly master the new types of combat training. The combining of great exactingness of the commanders with concern for improving the professional skills of the young pilot/navigators and with the ability to pass on their knowledge is characteristic of the leaders of this squadron.

In speaking about the training of a pilot/navigator, it must be said that this is a complicated process and requires constant attention. Certainly the pilot/navigator of a helicopter performs two functions: those of the pilot and those of the navigator. And for this reason increased demands are placed on his training both in navigational terms and in flight practices.

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## CAUSES OF PILOT LANDING ERRORS REVIEWED

Moscow AVIATSIYA I KOSMONAVTIKA in Russian No 12, 1979 pp 6-7

[Article by Maj A. Azhmyakov, Military Pilot 1st Class: "In Order Not To Lose the Ground"]

[Text] What pilot, at an airfield, does not watch a landing or taking-off aircraft? Yes, this is understandable. On the ground, if one does not consider the demonstration flights, can one see these piloting elements? Undoubtedly, from them a great deal can be judged about the skill of the pilot. But, regardless of this, at times young, and sometimes first-class air fighters and even commanders underestimate the importance of the perfect execution of take-offs and landings, and are little concerned with the further honing of their skills. Are they correct? Of course not.

Certainly if a pilot takes off and lands with confidence, then during the flight he will be fully concentrating on the execution of the mission, whether this is firing from the cannons, bombing, firing rockets, conducting reconnaissance or aerial combat. For otherwise he inevitably will be nervous about the termination of the flight, and would be concerned over previously made errors in taking off and landing. This, undoubtedly, to some degree tells upon the carrying out of the set mission. The problem is that even the strongest skills which are not reinforced by training are gradually lost. Everyone knows this. But does everyone force himself to train constantly and improve his skills?

In the article of Maj G. Ogir' "And an Eye is Needed for the Experience" (AVIATSIYA I KOSMONAVTIKA, No 1, 1979), an example is given when a first-class pilot, due to abruptly changed weather conditions, made an error in landing, and his aircraft rolled off the runway. He was forced to reflect whether everything had been done in the squadron for excluding such instances? Probably not. And in our unit certain pilots make mistakes in landing. One cannot help but agree with the arguments of Maj Ogir' about their causes.

We feel that the article's author is absolutely right that in planning combat training it is essential to consider the individual training level of each pilot. Otherwise, in compiling the plan, deviations from the rigid laws of flying are already programmed in. And it is here, as Maj Ogir' emphasized, that there is "a gradual loss of professional vigilance." Unfortunately, such a phenomenon is sometimes encountered not only among the rank-and-file fliers, but also among commanders with already completely established skills in the mastery of an entire range of exercises.

As flight training experience indicates, instrument monitoring of the quality of the exercises to be performed is essential both for the beginning pilot and one who has achieved high skills. Careful supervision of how each pilot masters the flight program is the best prevention of any errors.

Sr Lt Yu. Loshchilov made around 200 landings over a rather short period of time. There were no substantial comments and everything was carried out without complications under the program. But once in concluding a flight, he reduced power sharply and ahead of time when coming in and landed short of the runway.

After this, the pilot showed uncertainty in his own abilities. He began to use the end of the runway as the point for beginning to level out. Of course, this immediately influenced the rate of pulling out of the glide angle. The landings were made with errors.

The flight commander, Maj A. Fedosov, patiently explained to the senior lieutenant what the essence of his actions was. Many times he demonstrated in the trainer and aircraft cockpit how the controls had to be handled in the landing, where to look and at what angle. Seemingly everything was going well. And suddenly instead of one mistake the officer began to make another: he landed at an increased speed with a long overshoot and a little raised nose wheel. In training sessions he also did not act correctly.

Due to the daily exercises and constant training in the aircraft cockpit, Loshchilov thoroughly mastered how to operate the aircraft controls in the leg between the far and near homing beacons and how to handle the aircraft cockpit equipment. Seemingly everything had been done to achieve success. But again in solo flights the officer repeated his former erroneous actions.

Once, Loshchilov admitted to Fedosov that he had begun to become nervous about the landing and could do nothing about this. Obviously, he had had an unique psychological break leading to what we term ordinarily among fliers as a "loss of ground." Such instances while not too frequent do occur. They are difficult to combat. And if a commander has authority, if he possesses educational and professional skills, patience and restraint, and if he can combine sincerity and compassion with high principles and exactingness, he can help a subordinate combat this psychological break.

In using his entire pedagogical arsenal, the flight commander, with the help of other officers and squadron leaders, helped his student overcome his lack of confidence before the landing. Now Loshchilov is successfully following the flight training program and is confidently mastering modern combat equipment.

Not only beginning pilots but also mature air fighters can "lose the ground." I would not err if I said that in this instance the skills are lost as a consequence of neglecting training and a lessening of demands on oneself. Of course, other factors are not to be excluded.

The flight commander, Military Pilot 1st Class, Capt N. Kazakevich, an experienced instructor, was requalifying for new equipment. He had completed the introductory program in a two-man trainer virtually without the slightest errors and had been granted permission to solo in a combat aircraft. Eight times Kazakevich landed the

aircraft perfectly, but on the ninth suddenly caused a progressing bounce. Here the stress significantly exceeded the normal. The aircraft structure held, but the consequences could have been different. At the analysis held, Kazakevich frankly admitted that the reason for the near accident was that he had lessened up on his training. As a result, with an insignificant change in the landing conditions, he has "lost the ground."

Additional flights in a trainer and most importantly careful independent work and systematic training in the aircraft cockpit helped the officer to properly master the modern equipment and submount the psychological barrier. Now he is training young pilots and often reminds them of what the consequences can be of a flippant attitude toward independent work and training.

Two unsuccessfully landings. In the first instance the error was made by a young pilot, and in the second by an experienced one. And although the reasons for the mistakes are similar, the approach to the assessment of them differed. While we patiently instructed Sr Lt Loshchilov, we were hard on Capt Kazakevich for lessening the demands upon himself and for losing professional vigilance.

Analysis of the indoctrinal work in the squadron showed that we, the commanders are also to blame for pilot errors. Individual work had lessened both with the young and experienced aviators. And certainly there must be a comprehensive approach to the training and indoctrination of the air fighters and close attention to their successes and failures.

A flier can be given many check-out flights, and he can be brought even up to the level of second class, but if at landing speed he cannot distinguish a half meter from 1.5 m, then inevitably he will be afraid of the landing. Until he can overcome this psychological barrier, he will not make a real air fighter. This is why constant painstaking indoctrinal work is required from the commanders and political workers, as well as careful analysis of the completed flight missions using the objective monitoring equipment. Regular training is required in working out all the flight elements regardless of the experience, accrued flying time or position held by the officer. And then inevitably there will be a firm confidence in the absolute reliability of the military equipment and in one's own forces, and the "loss of ground" in landing will be completely excluded.

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## NIGHTTIME AIRBORNE MISSILE LAUNCH EXERCISE DESCRIBED

Moscow AVIATSIYA I KOSMONAVTIKA in Russian No 12, 1979 p 8

[Article by Maj V. Shilovich, Military Navigator 1st Class, and Maj V. Kozin: "Rocket Thunder at Night"]

[Text] An inspection check was underway in the subunit. The aviators were reporting to the workers of the superior staff on many questions of their combat training. The results were excellent. But the final grade to a determining degree depended upon the result which would be achieved in an inspection launching of a missile from a heavy missile-carrying aircraft.

To whom should this crucial test be entrusted? "To the crew headed by Officer Yu. Khaustov," the commander decided. The choice was not an accidental one. For several years running the military collective had kept the high title of outstanding and had maintained the leading position in the socialist competition. Officer Khaustov was one of the first in the subunit to be awarded the skill of military sniper pilot, and navigator Maj V. Kozulin, the title military sniper navigator. These successes had been achieved due to the effective and painstaking work of each crew member, and above all its commander, communist Khaustov.

The military collective did not form all at once. For various reasons there was a coming and going of personnel. Naturally, under such conditions it would be hard to expect smooth work on board the aircraft, and consequently, high results in air skills. For this reason Khaustov had endeavored to keep the membership of the crew.

In drawing up the new allotment of battle tasks the crew was shifted to a different subunit. And the assistant ship commander, V. Khryukin, at the same time the secretary of the Komsomol bureau, remained in his squadron until the report-election Komsomol meeting. And after it some of the chiefs were thinking about including the officer as part of a new crew. However Khaustov insisted and this did not happen. The captain became a true assistant commander in his home crew.

In the outstanding crew it has long become a rule that everyone is to work at full force regardless of their experience. "In arriving here," related the navigator, Sr Lt V. Pogural'skiy, "I continued to prepare for flights, as I had in my previous service position, with a certain coolness. The commander immediately spotted this and demanded from me an excellent knowledge of not only the route of flight but also actions in special instances, the provisions of the regulations, instructions and other guiding documents. And I myself saw the intensity and zeal with which the

far more experienced comrades worked through all the elements of the forthcoming mission. I had to greatly revise my working methods."

For sniper pilot Khaustov there are no important and unimportant, complicated and easy missions. For each combat mission the collective prepares in the most careful manner. Whether it is a circular flight, a flight in a zone or along a route, it is organized precisely as if the mission had been received for the first time.

"Zealous, honest and self-critical," is how Yuriy Georgiyevich [Khaustov] is described by his best friend, the first-class pilot, Maj M. Nekrasov. "He never complains of the aviation equipment or particularly of his subordinates if he has made some error. The officer places the highest demands on himself."

Once after a long flight the aircraft landed at its home base. And as always, the pilot received a grade of "excellent" for the landing. But everyone could see that Khaustov was dissatisfied by something. Having thanked Capt Khryukin for the help, he admitted that in the approach glide he had been distracted by the rate of descent indicator, and because of this he had not watched the attitude indicator.

Khaustov always flies with great passion and boldness. Under the most difficult situations he acts intelligently, decisively and coolly. The flight for the practice missile launch was a major test for him and for the entire crew. And communist Khaustov and his subordinate again demonstrated that they are rightly termed right-flankers.

In preparing for the sortie, the experienced commander was concerned primarily with making certain that each crew member was fully aware of the planned mission and had thoroughly studied the procedure for carrying it out. At a party meeting in the group, a professional discussion was held, and a high socialist obligation was approved, that is, to obtain an outstanding grade for the launching.

Not so much time remained. Each minute counted. In working on the trainer and at their seats in the cockpit and cabin, they obtained precise, maximally smooth actions in all the stages of the crucial flight. And the goals were achieved. The inspection indicated that the men were capable of carrying out their missions in the air in an exemplary manner.

The day of the sortie came. The aviation equipment was carefully checked out on the ground. The crew was satisfied that the engineers and technicians had readied the aircraft and the missile well. At the designated hour, the powerful missile-carrying aircraft took off into the night skies and headed out on the set course. Ahead was the long flight to the target.

The crew reached the range precisely at the point and on time. But a strong side-wind complicated the crew's work. Nevertheless, everything was in full order on board. All the specialists worked calmly and professionally. The reports were precise.

Having checked out the work of all the aircraft and missile systems, the navigator Maj Kozulin reported they were ready for the launch. Now the final word was the commander's. Having quickly assessed the situation, Khaustov gave the command: "Permission to Launch!"

Maj Kozulin released the missile precisely on the designated line. The aircraft "swelled" slightly having freed itself from the heavy burden. Everyone looked closely ahead, where they could see the rapidly disappearing flames from the firing missile engine.

Maj Kozulin gave the command to turn the aircraft as the drift had to be considered otherwise the strong wind would put the aircraft off the given course. But the missile continued its flight, rapidly approaching the essential point.

All the crew members worked confidently, in periodically reporting to the commander: "Everything is normal!" And in response they could hear the calm voice of the commander: "Good."

Finally there was the rocket thunder in the night.

Soon from the range came the message that the target had been hit dead center. This was the highest grade! The crew under the leadership of Officer Khaustov had won its next success in mastering military skills.

But ahead lay the steeper heights of flying skills. And the military sniper pilot, communist Khaustov is leading his subordinates to storm them with the new rank of lieutenant colonel.

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## GREATER ATTENTION TO IN-FLIGHT AIRCRAFT MONITORING SYSTEMS URGED

Moscow AVIATSIYA I KOSMONAVTIKA in Russian No 12, 1979 p 9

[Article by Maj Tech Serv R. Kuprikov: "The Monitor Recording Suggested"]

[Text] Glancing at his watch, the pilot headed to the airplanes. Finding his aircraft in the even formation of fighter bombers, he was intending to head to it. But he was stopped by an IAS [Aviation Engineer Service] officer who was directing the work of the technicians.

"You will have to fly on the alternate aircraft," he said.

"Alright. What is wrong with this?"

"The monitor recording after the last sortie was not completely good. Now the engineers are studying it."

Millimeter by millimeter the specialists were carefully studying the tape of the SARPP [Automatic Flight Monitoring System]. The uneven lines made by the altitude recorder showed the normal operation of the system and the skillful actions of the pilot. Only in one place was there a burst. It alerted Sr Lt Tech Serv A. Povarkov who was conducting the interflight instrument monitoring. An experienced and high-class specialist, he suspected a failure in the work of the hydraulic system in lowering the wheels. He shared his fears with the deputy regimental commander for the IAS who on that day was performing the duties of the senior flight engineer.

In actuality, there were grounds for concern. Judging from the monitoring equipment, during the lowering of the wheels there had been a brief pressure drop in the hydraulic system. Generally this did not run counter to the technical operating conditions. But the time intervals for the evening out of pressure after the lowering of the wheels differed somewhat from those given in the instructions. One might assume an internal loss of seal in the system, and this would undoubtedly be reflected in the work of the servomechanisms.

An additional questioning of the pilot who had made the last flight on the fighter bomber did not shed any light on the mystery. He did not note any deviations in the instrument readings which might warn of symptoms in the work of the equipment. Possibly the warning was erroneous, the specialist proposed. And only at the fueling area of the TECH [maintenance unit], in using the portable monitoring and check-out equipment did they succeed in discovering that due to the negligence of specialists at the repair enterprise, in the operating process one of the assemblies of

the hydraulic pump had gotten out of adjustment. It would have been very difficult to detect this under ground inspection conditions if the tape of the SARPP had not hinted at the direction of the search.

And this is not the only example of how the monitoring equipment helps the IAS specialists in the struggle to raise the reliability of the aircraft equipment and to ensure flight safety.

Lt Col A. Vakulenko, in carrying out a mission, noted a brief so-called run-up in engine speed. The SARPP tape not only substantiated the pilot's words, but also told the specialists in what maneuvers of the aircraft, at what altitude and speed the speeding up had occurred, how long it had lasted, and how this was reflected on the working of the propulsion unit. All these data helped in analyzing the failure and made it possible to work out dependable preventive measures.

Let me give another example. Once the engine stopped on an aircraft in a landing during the leveling out. This did not reflect on the quality of the landing. And although this phenomenon is extremely rare, it is serious. Judging from the pilot's information, he had been following the instructions precisely, and had not made any error in handling the cockpit equipment. What was the problem?

There were different versions, but the tape of the monitoring device dotted all the "i's." It turned out that the pilot was to blame who instead of bringing back the engine controls to the "flight idle" position put it in the "stop" position. He committed the mistake because he had not considered the design features of the trigger used on his aircraft.

One other example, in my view, is indicative. After the landing of a fighter bomber, we began to study the SARPP tape, and discovered that a young pilot had brought the aircraft back to the ground at a slow speed and had made a hard landing. He did not pay much attention to this, but for us, the aviation specialists, the case was alarming. In the first place, there was an additional strain on the elements of the radio and electronic equipment which were sensitive to any sort of vibration, as well as on the landing gear. Secondly, each of us was interested in the development of the pilots and in having them make fewer mistakes in carrying out a mission. A technician and mechanics carefully inspected the aircraft. The flight commander responsible for the pilot took the appropriate measures to warn against such landings.

The pilots and aviation specialists fully trust the monitoring equipment, and carefully study each recording. Often the technicians, in turning in the SARPP tape to the laboratory after taxiing the aircraft to the position, participate in decoding the recordings. The experienced operations man, Sr Lt Tech Serv M. Taran, the young officers S. Makov, A. Perminkin and many others are experts in analyzing the KZA [audio monitoring device data].

This is helped by the regular technical training which is given great importance in the squadron. We invite the chief of the instrument monitoring group, Capt Tech Serv V. Gayday, or one of the officers of the group to the exercises. They remind us of the procedure for handling the tapes, and teach us to correlate them with the standards issued for every aircraft of the subunit.

Examples of the recordings with explanations have been hung up in the classrooms and the squadron huts. This provides an opportunity for the officers to be better informed of the work of the monitoring devices, particularly in studying single commands and important operating parameters of the engine, systems and controls.

The laboratory keeps a log of reports on the operation of aviation equipment from the instrument monitoring materials, a log for a quality evaluation of the workability of aviation equipment, and other documents. At exercises, the engineers or the chief of the aircraft and engine group, Sr Lt Tech Serv A. Povarkov, acquaint the technical personnel with these recordings and with comments derived on the basis of the readings of the SARPP tapes. If a potential malfunction has been found in a system of a certain aircraft, this instance is reported to the squadron personnel. It is considered in the plan for conducting preventive maintenance on the remaining aircraft.

As I have already said, a predominant majority of the technicians show great responsibility in studying and mastering the procedures for operating the KZA equipment. During periodic inspections, when the engineers check the theoretical training of the technical crew, the officers show profound knowledge and the ability to decode the SARPP recording.

But, unfortunately, at times it is essential to remember that the monitoring of the state of equipment using the KZA data is as essential as the visual or instrument inspection, and the barograms of the aircraft recorder must be studied seriously, and not formally. For example, Sr Lt Tech Serv V. Usov (who, incidentally, has the qualification of master) often asked fellow servicemen to look at his tapes. His comrades rightly accuse the officer of conceit and a desire to work in the old manner.

The exactingness of the commander and explanatory work with V. Usov and other specialists played their part. They altered their attitude toward the monitoring devices.

In struggling to keep the title of outstanding for the squadron, our aviators have been concerned with raising the reliability of the aviation equipment and ensuring flight safety. The on-board monitoring equipment is their assistant.

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## WIDER ROLE FOR SEMINAR STUDIES DESCRIBED

**Moscow AVIATSIYA I KOSMONAVTIKA** in Russian No 12, 1979 pp 14-15

[Article by Maj P. Reutov, Military Pilot 1st Class: "Seminars and Flights"]

[Text] The indoctrinating of courageous, ideologically convinced and strong air fighters who possess high moral-political and psychological qualities is achieved by many forms of work and above all by the good organization of Marxist-Leninist training. This includes lectures, consultations, and seminars the content of which is linked to the combat training missions. And undoubtedly, essential to this are a conscientious attitude on the part of the propagandists to their duties, the appropriate work of the commanders and party activists, as well as various forms of control and aid.

I would like to take up the preparations for and conducting of seminars--one of the important means for influencing the hearts and minds of the men and for instilling high military qualities in them. In my view, precisely seminars are a concentration of the work in the area of indoctrinating a feeling of responsibility for the exemplary execution of military duty. I say this because for several years I have directed a Marxist-Leninist study group.

A seminar should be primarily a discussion of the subject itself, to-the-point, profound, with a scientific basis and, certainly, with references to the views and conclusions of the founders of Marxism-Leninism, the documents of the Communist Party, the congress decisions and the CPSU Program.

At the same time, a seminar exercise achieves its aim when its subject is linked to the specific tasks of indoctrination and combat training, when the fliers, in gaining theoretical knowledge, objectively evaluate their own activities. And here it is important that each air fighter be profoundly aware of the significance of his work for ensuring the combat readiness of the subunit, and realize that a high result for any flight mission starts with a conscientious attitude toward the mastery of technical knowledge and flight expertise.

This is not a simple matter. It is not enough for the group leader to know the subject and be a good educator. He should constantly study the professional qualities of his students, delve into their service activities and take an interest in their everyday life and spiritual needs.

In the Marxist-Leninist study group which is described here, a majority of the students seriously and profoundly are studying the theoretical material. For them the knowledge gained is turned into firm convictions and is embodied in practical deeds. Among such students I would put officers V. Yagunov, V. Moskalevich, A. Nikonov and many others. Probably there has not been a single seminar where in their speeches they did not take up the missions being carried out by the squadron, or did not bring up the shortcomings which have impeded individual fliers from carrying out the flight missions in an exemplary manner. For them political studies are fused with service and life.

These officers are struggling to shorten the times required to reach combat readiness, for flight safety, and for improving their class qualification, they are helping the command in strengthening discipline, and are actively involved in the social life of the subunit. In other words, they possess high moral-political and military qualities.

Once, at a seminar after a speech by Capt Nikonov, I asked the officer what he would do if in aerial combat against an enemy bomber he did not hit it with the missiles (certainly such a thing could happen).

"I would not miss," the flier commented firmly.

"But all the same? Let us assume the enemy evaded it."

The pilot thought a bit and replied:

"Then I would ram."

I feel this answer says a lot. How should a seminar leader proceed when he discovers certain shortcomings in the combat training of a student? For example, let us take the instance with Military Pilot 1st Class, Capt V. Vasilenko. He is an experienced air fighter, and in the exercises did well. But suddenly in a difficult air situation, he showed confusion and committed a potential cause for an accident. And he tried to appear as though nothing serious had occurred. As the squadron commander and group leader, I viewed this as an indication of a miscomprehension of all responsibility for carrying out a mission.

At the next seminar, in discussing one of the theoretical questions, I drew the students' attention to the routine affairs of the subunit, and to what at times prevented individual aviators from carrying out the set missions effectively. Along with others, I involuntarily raised the question of the actions of Capt Vasilenko. The officers said frankly that there should be no place for indifference in flying or superficiality. Vasilenko also agreed with this. And now he viewed his flying errors differently. For the sake of justice, it must be said that this pilot subsequently distinguished himself repeatedly during flights.

Here is another example showing the benefit of a creative discussion in a seminar. Young pilots had arrived in our squadron. They had mastered the training program well, and in the exercises on Marxist-Leninist training they were up to the others. But once in a flight, Lt M. Tsukanov made substantial errors in bombing from a complex type of maneuver.

Seemingly we would have to plan additional flights for him, work with him on a trainer until his skills became automatic, and there would be progress. However, as strange as it seems, in the subsequent flights after the exercises, the same thing happened, although on the ground Tsukanov had performed properly.

We began to wonder about the causes and how to help the young pilot make up for his failings and not fall behind his comrades. The latter circumstance was particularly frightening for him.

"The pilot is worried, and for this reason in the target area he is excessively restrained," commented the deputy squadron commander for political affairs, Maj V. Petrenko. "Here, in addition to our words, Comrade Commander, it would be a good thing for Tsukanov to hear the opinion of his comrades. Let them suggest something."

We decided on this.

I remember, in preparing for the next seminar, I was thinking how to better organize the discussion of the main theoretical question of the subject, to link it with the tasks of the aviators, and in a tactical manner, without damaging Tsukanov's self-esteem, attract the attention of the other fliers to him. I advised the officer who was to give the abstract, after bringing out the basic subject at the end of the report, to say a few words on our inner affairs and concerns.

The plan worked. After the speaker, many fliers, in bringing out the essence of theoretical problems, without fail took up the tasks of the collective, and shared their impressions on their first flights for combat tactics, and spoke about mistakes and negative elements. Tsukanov also spoke. He described his difficulty. It turned out that in one of the flights the pilot had made an error. He considered it insignificant and it would pass. But since then he had never been free of a feeling of uncertainty. And thus his fear of falling behind his comrades....

In essence, Tsukanov himself helped us discover the cause of his failures. And he did this in the presence of all the squadron pilots.

The comments of Sr Lt V. Moskalevich were noteworthy. And for this reason. Having described in detail the essence of the demands stemming from the decisions of the 25th CPSU Congress on the armed defenders of the socialist fatherland, the officer described how he himself was carrying out the assumed obligations. He gave an example from his own experience when he could not get one of the elements of a flight mission. Uncertainty and even fear arose.

"Senior comrades helped," continued Moskalevich. "Due to them, I felt a confidence in my forces."

I admit that these and other comments led me to the idea of flying with Tsukanov to the range. And on the next flight day, I gave an escorted flight to the lieutenant. We bombed well. Tsukanov accurately repeated my actions during the repeat pass, and hit the target with an excellent grade.

"I did not expect that to happen!" he said on the ground, without concealing his joy. "May I do the flight solo?"

This was a victory for the young pilot over himself. Since then he has flown confidently in all combat training flights.

Here is how a lively, unforced discussion of theoretical questions in the subject of a seminar, in being closely tied to the life and missions of the aviators, brings tangible benefit not only to the students but also to the exercise leaders.

Incidentally, I cannot help but mention the benefit which the individual political days conducted in the unit brings to the students as well as to us, the leaders of the Marxist-Leninist study groups. In their speeches, the commanders, political workers and the experienced communist leaders give the aviators clear and exhaustive answers to many theoretical questions concerning them. For this reason, as experience has shown, the seminars on Marxist-Leninist studies are more effective in the instance that they are held directly after political days.

The Decree of the CPSU Central Committee "On Further Improving Ideological and Political Indoctrination Work" states: "...The main task is to arm the Soviet people and each new generation with the invincible weapon of historical truth, with a profound understanding of the laws and prospects of social development, relying on the unshakable basis of Marxist-Leninist teachings." As the decree demands, a feeling of high responsibility for the content and results of indoctrination and a creative search for new forms and methods of working with people should be inherent to us, the communist leaders.

This is why it is essential to see to it that each seminar exercise leaves a profound trace in the awareness of the aviators and helps instill in them the qualities needed by the armed defenders of our great socialist motherland.

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## BETTER OBSERVANCE OF PREFLIGHT HEALTH RULES STRESSED

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[Article by Lt Col I. Konstantinov, Military Pilot 1st Class, and Capt Med Serv V. Lubentsov: "Whence the Comment 'NF'?" ]

[Text] Not much time remained before the entrance exams for the academy, and Capt Yu. Molchan used every spare minute for studying. He abandoned the compiled plan and that evening, as on the eve before, he decided to stay longer working on his books and catch up with what he had missed. He had to fly tomorrow on the first shift, the beginning was at 0700 hours, but as long as he was able, he could study.

Being distracted, Molchan did not notice time passing, and when he left his textbooks, the hands on the clock showed that it was past midnight. He quickly lay down on his bed. However, try as he may, sleep would not come. Again and again mathematical problems and different variations for solving them arose before his eyes. Finally he fell asleep, but slept poorly.

At breakfast, he did not have any appetite. During the preflight medical examination, the physician noted the depressed state of the pilot, the rapid pulse and the increased arterial pressure. Molchan had to be grounded. In the planning table, opposite his name there appeared the comment "NF" (flight not fulfilled).

We recalled this instance when we read in the journal the article by Lt Col V. Shishkin entitled "The Shining Halo" (No 9, 1979), in which the author raised an important question for aviators, that is, discipline in flying. Undoubtedly, the successful outcome of a flight depends upon the accurate and prompt performance of functional duties by each crew member. Hence, the professional skill of a pilot, navigator or any other specialist is a consequence of their high self-discipline and a profound understanding of the responsibility to defend the motherland.

As is known, because of the specific features of their activities, flight personnel require excellent health, high psychophysiological preparation and good spirits. The absence of any of these components, regardless of the reason, leads to the development of mistakes on the ground and in the air, and these can lead to an accident.

As a rule, the workday on the eve of flights starts with preliminary preparations. Having studied the mission set by the commander, the flight personnel begins their independent work. Experienced commanders plan it in such a manner that the fliers do not experience excessive fatigue or overstrain.

As is known, during the daytime the activeness of the human organism reaches its maximum values, and by the end of the day and at night declines intensely. For this reason, the most important questions which require significant mental efforts are largely solved during the start of preliminary preparations. In our view, it makes sense to split this into two periods, having included, for instance, after 2-3 hours of exercises, 1 hour of physical training. Such a break will make it possible to lessen the tension in the pilots, and will raise the overall tone of the organism. Depending upon the start of the pending flight shift, after completing the exercises, it is advisable to conduct training sessions on special equipment as well as sports games.

A great role is played by a precise daily regimen. Frequent changes in it or violations disrupt people. We would particularly like to say something of the use of free time by the pilots. Precisely during this period there must be careful control over the preflight rest. And this, as practice indicates, always depends upon self-discipline, and upon a developed feeling of the responsibility of each crew member for the quality of the flight.

Nighttime flights place great demands on flight personnel, for they are basically made by instruments, and for this reason have a strong psychological effect on a person, particularly if the flight is carried out under adverse meteorological conditions. The documents which regulate flying provide 8 hours for nighttime sleep. Prior to night flights the aviators are given another 4 hours of daytime rest. And it is very important to use this time properly, since daytime sleep moves the optimum level of work efficiency to a later time. In a well rested flier an unique reserve of inner forces is created, and these are not spent on controlling the aircraft or the carrying out of the flight as a whole. This reserve makes it possible to carry out the mission without overstrain and fatigue which inevitably lead to mistakes and deviations from the set condition.

Sometimes pilots, in relying on their youth and good health, neglect complete pre-flight rest and use the time assigned for it for other purposes. Thus, Capt S. Ligostayev, prior to nighttime flights, instructed friends in driving a car. But in the medical examination, his objective physiological indicators did not meet the standard. The officer was grounded. As a result, the flight training program suffered, and the development of the air fighter was retarded.

Instances of the violation of preflight conditions disturbed the leadership, the party and Komsomol organizations of the unit them. The appropriate measures were taken. Along with the commanders, the regular and non-T/O propagandists and the woman's council became involved in this work. In speaking with the family members of the aviators, the chief of the medical service emphasized the importance and significance of the preflight conditions during flying, and explained that the strict observance of these is one of the important elements in flight safety.

A serious talk was held with the officers who had violated the laws of flight service. At a general officers' meeting, they discussed the misdeeds of flight engineer Capt N. Tashkin who had violated preflight conditions. And those who are fond of drinking were not overlooked. Many sharp words were directed against them. These comrades were strictly cautioned. The measures carried out produced tangible results. In the unit the discipline of preflight conditions and the quality of carrying out the flight missions noticeably improved.

The prevention of violations in certain working and rest rules should be carried out constantly and purposefully. Experience has shown that deviations from the established standards of flying do not arise suddenly. They accumulate surreptitiously, and often begin from something slight, for example, from a uniform violation, negligence, or excessive presumption.

As a rule, all of these so-called minor deviations are seen by senior comrades, but they become accustomed to them. But when a more serious infraction is committed, they remember what they themselves saw earlier.

Of important significance is an explanation of the psychophysiological features of flying. This work produces the greatest impact when each flier, technician, or aviation specialist remembers that flight safety begins precisely with him. The possibilities of the human organism are not limitless, and if an infraction of the preflight conditions has not told on the carrying out of the flight today, this does not mean that everything will be well tomorrow. The rigid control exercised by the commanders and medics is just a portion of the measures. But the strictest judge in assessing the fitness of a flier, navigator or flight engineer for a flight is their conscience. A conscious, principled and sober judgment of their personal fitness is a measure of maturity for an air fighter.

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## PROBLEMS OF IMPROPER FLIGHT CONTROL DISCUSSED

Moscow AVIATSIYA I KOSMONAVTIKA in Russian No 12, 1979 p 29

[Article by Capt Yu. Andronov: "The Plan Was Not Issued to Everyone..."]

(Text) That day the flights were to be held under simple weather conditions. In the morning the skies were clear, but later on storm clouds began to appear. However, work was carried out according to the plan. The crews who had carried out their missions periodically informed the flight controller, Maj V. Artamonov, of the weather situation.

But then an alarming warning was received by the control tower. "In the area of the landing course," the aircraft controller broadcast, "I see a blip, probably from a cumulonimbus cloud...." Soon thereafter came reports from the pilots in the sky. Some said that heavy solid cloudiness was approaching from the same direction mentioned by the officer of the control tower toward the airfield, while others spoke of insufficiently clear visibility of the runway from the third turn. Moreover a rather fresh sidewind had blown up.

Naturally Maj Artamonov was concerned. There were young pilots in the air along with experienced ones. Measures had to be taken to ensure flight safety. And the traffic controller, it seemed to him, found the only correct way out of the developing situation. Over the airwaves went his instructions that the landing would be made from the opposite direction.

The decision appeared completely sound and natural. But in the subsequent actions of Maj Artamanov there were certain moments which caused many to be excessively alarmed.

A person entrusted with the control and leadership of the flight is given great rights. And quite understandably the interests of flight safety demand that he use these rights circumspectly. The commander at that time was in the air and using a different communications channel. However Artamanov could and should have sought the advice of his deputies. As was pointed out by the senior chief in analyzing the potential accident causes which occurred that day, the traffic controller using radio or other means should have clarified just how rapidly the weather was deteriorating (subsequent analysis made it possible to conclude that Maj Artamanov could have landed all the pilots in the air normally). There were also other opportunities for ensuring proper flight safety.

Moreover, having given the order to change the landing course, Maj Artamanov did not check whether or not his decision had been correctly understood and was being carried out by the specialists of the control tower, the RSP (Radar Landing System), and the other officials engaged in traffic control and its support. Having moved to the opposite control tower, Artamanov began to wait for the further development of events.

In the meanwhile, the situation both in the air and on the ground took a turn for the worse. For a certain time, the antennas of the RSP radars searched that portion of the airspace where the aircraft could not yet appear. Looking in the same place through binoculars was the observer whose duty it was to make certain that the wheels had been lowered. And certain pilots did not know about the change in runways, as when the command was given they were carrying out radio traffic on a different communications channel.

At this rather crucial moment, the controller committed another mistake, having allowed Lt A. Minayev to take off from the previous course.

The difficulties did not begin at once. And the first of them will seemingly not have any bearing on the subject of our discussion. Here is what happened. Because of the inaccurate actions of Lt Minayev in handling the cockpit equipment, the wheels did not come up, and the pressure in the hydraulic system declined. The flier reported this to the ground.

Maj Artamanov asked what the instrument readings were. When the lieutenant gave them, the controller commanded:

"Abort the mission, jettison fuel and come in for a landing."

It is quite possible that Minayev could have made the mistake in raising the wheels in a different flight, that is, absolutely independently of the incorrect actions of the controller. But it is also impossible to exclude its happening due to the excitement of the young flier who heard the instructions of Maj Artamanov. In one way or another having sent the lieutenant on a mission (and at the moment of changing the take-off direction, as was emphasized in the analysis, this should not have been done), the controller himself impeded operating conditions.

It was discovered that Capt D. Tarasov who suspected nothing of the change in take-off direction was endeavoring to land from the previous course. The pilot had been operating on a different communications channel and had not promptly received the essential instructions.

Everyone realized that such a situation could entail the threat of a mid-air collision. Maj Artamanov was forced to order Tarasov to raise the wheels and to fly a circular route which was required under altered conditions, and this the pilot immediately did.

Several crews who had completed the mission landed without any problem. But then Capt Tarasov who was a first-class pilot clearly made a mistake. He made his second landing pass with...his wheels up. Why did this happen?

Those who investigated the situation drew the following conclusion. The pilot, in moving the switch for the first time to the "up" position, did not subsequently, as the instructions require, move it back to neutral. And subsequently he merely did not pay proper attention to where the switch actually was, and did not check before reporting to the ground that the wheels were locked down from the going on of the signal lights.

Of course, there can be no justification for such an error by an experienced pilot. But in the analysis it was pointed out that the overall situation which developed in the course of the flights to a definite degree had influenced its occurrence. Only on the third pass did Capt Tarasov land safely.

Several minutes later the aircraft of Lt Minayev began his final descent. The sidewind had become stronger. In fighting against the drift and endeavoring to keep the aircraft along the axial line of the runway, the young pilot, regardless of help from the controller, for a certain time lost altitude control. As a result the threat arose that the plane would touch down a significant distance away from the runway. But ultimately, the lieutenant was able to land the aircraft without any particular deviations from the norm.

As we can see, in a relatively short period of time, a number of near accidents had arisen. The representatives of the superior staff who analyzed the flights that day concluded that it was only by chance that they did not involve undesirable consequences. In actuality, the situation then was rather tense.

The senior chiefs investigated and analyzed in detail the reasons for all the errors. In particular they pointed out, Capt Tarasov and Lt Minayev acted incorrectly as a consequence of certain omissions in flight instruction work, in moral-psychological training, and in the training and indoctrination of the air fighters. They also disclosed shortcomings in the organization and planning of the flights. According to the planning table, there were many aircraft simultaneously in the air. This, undoubtedly, impeded the work of Maj Artamanov. Moreover he at that time had just been granted permission to act as flight controller, and he still did not have sufficiently firm skills in this extremely responsible job.

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## USE OF MENTAL FLIGHT MODELS BY PILOTS RECOMMENDED

Moscow AVIATSIYA I KOSMONAVTIKA in Russian No 12, 1979 pp 30-31

[Article by Col A. Yena, Military Pilot 1st Class: "The Failure Was in the Model"]

[Text] Everyone who has linked his life with the skies is marked by a great desire to fly. As a rule, this desire displaces into the background all other thoughts, even favorite pastimes and interests. But desire alone is not enough for the successful mastery of the difficult occupation of an air fighter. Under any conditions this desire must be reinforced by a painstaking and steady improvement in knowledge and skills. And only with this attitude toward study on a flight day will one not be beset by the thought of "have I done everything for preliminary preparations?"

And certainly you must confess, sometimes literally before the beginning of a flight shift it turns out that a pilot is not fully prepared, although the evening before he studied the recommended literature conscientiously. And is it any shame when usually the simplest questions are omitted. But later on this leads to mistakes.

The following instance comes to mind. After completing several circular solo flights, they planned to check the piloting techniques of Lt P. Nesterenko in a zone. According to the training program, Nesterenko was somewhat ahead of his fellow servicemen and realized well enough that it would cost him to lag in his flight preparations, and that he could change from a leader into a laggard. The young flier studied hard for the mission of the check-out flight. In his notebook he drew in all the movements in the sequence which they should be performed in the zone, he indicated the entry and exit speeds, how the bank was to be changed in the process of executing turns, how many meters of altitude the aircraft should lose or gain in vertical maneuvers, and what engine speed must be maintained at characteristic points of the flight maneuvers. In a word, the lieutenant cannot be criticized for insufficient preparations.

However, the instructor felt something wrong immediately after take-off and the raising of the wheels. At that time Nesterenko was wracking his brains wondering "what was the course to the zone which the controller just gave me?"

In the preliminary preparations, the young flier had completely overlooked this elementary question, having decided to use the characteristic landmarks to reach the area. But on the flying day, visibility was rather poor. Of course, the inspector immediately realized why Nesterenko was slow in making the first turn, and asked right away:

"What are the course and flying time to the zone?"

The officer could not answer. Naturally, the instructor made a strict comment. Then he himself turned the aircraft to the required course.

The lieutenant's mood was spoiled. He was bothered by the thought: what could he say to the inspector on the ground, and what weighty reasons could he raise in his justification? As a result, the entire flight right up to landing was accompanied by new mistakes which previously had not been noticed. Thus, just one detail which had not been thought out in the preliminary preparations involved a whole series of miscalculations in the air. The young pilot then scarcely kept within the standards for a satisfactory grade.

Could the mistakes have been avoided? Undoubtedly. If one carefully analyzes Nesterenko's actions before the flight, it is not difficult to see that he studied and thought out not the entire mission to the zone, but only one of its main fragments, that is, the maneuvers themselves. At the same time, each mission must be modeled, as they say, to and from, and in one's mind one must try to analyze the created model and, if need be, supplement it with the required data. And if the lieutenant had acted precisely in this manner, he would never have overlooked such questions as the course and the flying time to all the flight maneuver zones.

What is the convenience of a mental model of a flight? Probably the main merit of it is the speed and simplicity of execution. A pilot can create it in a few minutes. But, of course, it is better to have a complete model from the time of the preliminary preparations, having depicted the entire strategy on paper. Along the course of the flight it is very useful to briefly describe one's actions according to the mission, to reinforce them with calculations, and interject one or two special instances. Such careful work and its analysis nullify the possibility of the occurrence of various errors.

One of the most important qualities of an air fighter is the ability to show initiative in a flight. However, unfortunately, certain fliers feel that modeling leaves little room for creativity. Obviously this opinion is mistaken. The model of a flight provides precisely more scope for resourceful and enterprising actions in carrying out the mission in the air.

Once, in a tactical flight exercise, a pair of missile-carrying planes were to take off to intercept "enemy" aircraft. The pilots started up the engines, taxied to the runway and took off under afterburner conditions. The lower cloud layer corresponded to the set weather minimum. And the air fighters, having scarcely reported to the controller that the wheels were up, were in the clouds. The leader, in strictly maintaining the established flight conditions, immediately established contact with the control tower. At this moment the wingman, Capt N. Fugol', noticed that the right light was not on for the wheels in an up position. Pressing the test button, the pilot was certain that the light was working. "Hence, the right wheels are not up fully," he thought.

The situation became more complex. Officer Fugol' was clearly aware that alone it would be extremely difficult for the leader or perhaps impossible to carry out the mission. It was essential to reduce power and try to raise the wheels again. But during this time he fell behind the leader, and lost him in the clouds. And it was impossible to continue the flight with a half-raised wheel.

As is usually said, a problem situation had arisen. Having reported all of this to the commander of the pair, Fugol' reduced power and put the wheel controls in the "up" position. At the same instant he lost the aircraft ahead of him from view. The wheel was fully retracted, and the red light went on.

Capt Fugol' had anticipated the loss of his leader. In accord with this, he made a correction in the model of the further flight according to the existing situation. The pilot realized that if he would begin to carry out the commands of the controller which were being given to his leader, then his fighter would constantly travel a parallel course to the commander's aircraft with any change in it. And Fugol' knew the speed and altitude from the leader's information.

The pilot immediately turned inwards. He immediately reported his actions to the leader, and then assumed his former course. Thus continued this very tense flight. One after another came the commands of the air controller over the airwaves. In listening to them, Capt Fugol' energetically turned his fighter in the direction which had been given to the leader.

At the same time, the arrow of the altimeter indicated 6,000 m. It became noticeably lighter in the cockpit, and this showed the proximity of the upper edge of the cloudiness. And then the silver aircraft emerged out of the clouds. The captain breathed easier. As to the left and at a somewhat increased interval above him he saw the leader's aircraft. Several seconds later the pilot was in his place in the battle formation, and soon thereafter the pair of interceptors overtook the "enemy."

What helped Officer Fugol' successfully emerge from the difficult situation? The flight model. In compiling it, he anticipated his actions in the event of losing the commander in the clouds. This provided an opportunity for the pair to successfully carry out the given mission.

Modeling becomes a good support not only in a solo flight but also in a check-out flight. The person who has thought out all the details feels himself to be the master of the aircraft and operates the controls as if he was flying alone.

From the experience of other commanders and from my personal practice I firmly know that any instructor prefers to fly with a pilot who endeavors to do everything himself, even with certain discrepancies, than with one who pilots cleanly but waits for suggestions. With other conditions being equal, professional growth is faster in the enterprising officer.

In remembering the model which was compiled beforehand in preliminary preparations and adjusted in preflight preparations, virtually all instructors provide an opportunity for a trainee to pilot as much as possible. Ordinarily a commander in the air notes any mistakes of a pilot, but reacts only to those which go beyond the limits of a satisfactory evaluation. On the other hand, after landing, he analyzes the slightest discrepancies, in endeavoring to help the subordinates eliminate them more rapidly. "It is insulting," I was once told by an experienced instructor, "when you explain something in detail and it seems that the trainee understands everything, but in the next check-out flight makes virtually the same errors." I remember, he pointed out, that such instances were described by certain instructors as a lack of discipline. It is difficult to agree with this. The reasons are to be found more often in a lack of attention, in the confusion of the pilot, and at

times in a lack of initiative, and the inability to break with an old stereotype of actions and create a new one, and to model the flight more fully.

To avoid such errors, often after a check-out flight, the commander forces the trainee to analyze in detail his work in the air. In summing up, he points out how to rectify one or another mistake, and simultaneously says what shortcomings were omitted in the analysis. Such a training method provides positive results, it focuses the pilot's attention on the ground and during the flight, and forces him to prepare ahead of time for taking the exam with the commander. And naturally in this instance the flier will be more attentive to modeling the mission.

Two check-out flights made with the young pilot Ye. Belov stick in my mind. In the first, the lieutenant made a characteristic error in the fourth turn, and the aircraft came out not lined up with the landing strip but somewhat to the right. This required an additional maneuver for reaching the landing glide. The reason was the late start in executing the fourth turn.

After landing Lt Belov not only listened to me attentively, but also carefully watched every movement of my hands. You could feel that in his mind he was there, in the air, imagining the angle of sight to the runway and the moment for beginning to execute the fourth turn. The second check-out flight affirmed fully that Lt Belov had not only analyzed his mistake, but had made a correction in the flight model and provided a procedure for rectifying the shortcoming. He made the last turn of the circle so accurately that not the slightest maneuver was needed to line up with the center of the runway.

Life has convincingly affirmed that modeling opens up broad prospects for each pilot in mastering combat skills. It is only important that the model of any flight be all-encompassing and detailed. Then many mistakes in flying will be fully eliminated.

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## EFFICIENT WORK IN AIRCRAFT MAINTENANCE UNIT REVIEWED

Moscow AVIATSIYA I KOSMONAVTIKA in Russian No 12, 1979 pp 32-33

[Article by Lt Col G. Spiridonov: "Using Daytime Standards at Night"]

[Text] The sun was dropping toward the horizon. The working day was over. The shadows from the aircraft and airfield structures were growing longer.

The chief of the TECh maintenance unit, Guards Engr-Maj A. Logvinov, was in his office. He knew that the specialists had to check only the fuel system under a load, and then the aircraft could be turned over to the squadron.

The group chief, Guards Capt Tech Serv L. Kiselev, unexpectedly entered the room.

"They have detected a fuel leak from the system in an inaccessible place," he reported.

"That is all we needed," thought the TECh chief. This aircraft had brought him a lot of trouble. The time planned for it by the schedule was already over, and it was now on you. Logvinov realized that a delay in delivering the missile-carrying aircraft would tell on the work performed on other aircraft which soon would be received by the TECh. Possibly this trouble could be fixed without the additional disassembly of other equipment.

"Please clarify the nature of the flaw."

Kiselev quickly and efficiently sketched in the picture. From his explanations it followed that the flaw could not be eliminated without involving specialists from the groups of officers P. Tumanskiy, N. Kuznichenko and others. And the reason for the leak could be the misalignment of a pressure-seal gasket.

"The conclusion on the gasket is not final," added Kiselev. "However disassembly in any case is essential."

"Did you try to tighten the nut?"

"We did, but without success."

"Well, let us go take a look."

The officers left the office and headed to the area not far from the hangar. Logvinov was quiet and thoughtful. He did not want to allow the idea that the malfunction could be the consequence of the negligence of the executors. Skilled mechanics are selected for such operations. Multiple inspection serves as a dependable barrier against failures and defects. The men struggle for a high quality of work, and value the prestige of an outstanding subunit. They could not make such a flagrant mistake.

The specialists stood back, allowing the chief of the TECh up to the open inspection cover plate....

Of all the aircraft with which Logvinov had been involved before, this one which embodied the achievements in the area of aircraft building, radioelectronics and automation was particularly to his liking. However, with relative operational simplicity, it required very delicate handling. The aircraft responded sensitively even to the slightest manifestation of negligence or indifference, and punished those for inattention.

The TECh chief, in examining the clever steel ligature of piping, did not notice any errors in the assembly work. But on one of the joints of the main line located beyond the lines of the radio and radioelectronic equipment, he also discovered a fuel leak. He had discovered what he had discovered, but without additional disassembly of the equipment he as yet could not determine the direction for seeking the causes of the failure. There was not a single outside symptom. Like it or not, certain assemblies would have to be removed. Kiselev was right, this was indispensable.

It is easy to say remove. But how much additional time and effort is required. Having assessed the situation, Logvinov assigned two brigades so that they could work alternately, having assigned from all the groups the representatives able to make the inspections effectively. He gave an assignment to each so as to prevent the accumulating of mechanics around the same areas. Then he phoned the regimental deputy commander for the IAS aviation engineer service .

"Do you know that tomorrow the aircraft must fly?" asked the chief.

"I do," affirmed Logvinov.

"The men are ready to remain after the end of the work day. You are not against? I must say it is an unusual case, I haven't seen it before."

"Good. I will grant the night work. Report on the plan."

Logvinov briefly informed him of the measures taken and that he would remain during the night along with the brigades.

"I want myself to investigate everything in detail," he added.

"Fine. If new difficulties appear, call."

At the area, disassembly was in full swing. After the aircraft and engine specialists, the first to begin work were the mechanics from the outstanding groups of

Guards Capts Tech Serv P. Tumanskiy and N. Kuznichenko. Nimbly and quickly, in the proper sequence, they removed the equipment in order to gain access to the site of the fuel system malfunctions.

The groups commanded by these officers are rivals in the competition. However, this does not prevent them from cooperating closely and helping each other at a difficult moment. The chief of the radio equipment group, P. Tumanskiy assumed leadership over the specialists of the radioelectronic equipment group of N. Kuznichenko when the latter was called away from the subunit for an extended time. Each day he met with Guards Lt V. Murav'yev who was standing in as the group chief, he was interested in what they were doing and gave advice on how to better organize the training process for the mechanics, and carry out repair work of high quality. And the group did not give up its place.

And this time the brigade carried out the assignment excellently. The technicians and mechanics worked with teamwork. Having completed the operations, they reported this precisely to the superior.

It was now the turn of the aircraft and engine specialists. In this group many have the skill of master. For example, Guards WOs ["praporshchik"] S. Gavrilenko, A. Veselov, G. Averkin and S. Olekseyenko. Probably on the aircraft there still was no malfunction which would escape the attention of these specialists. And there had been no instance of accusing them of poor quality work.

Logvinov liked to watch the warrant officers work. They always had their tools and necessary materials at hand, and were laid out in a definite sequence. Without looking, they picked up a screwdriver or wrench, and then put it back precisely in its previous place. Seconds were saved, and from these minutes were formed. Each removed piece was placed on a rack. These specialists excelled in high technical skills.

But there was a time when the situation was different. And not only in this group. Along with the achievements there had also been failures and violations of military and production discipline. This situation could not be tolerated. Along with the party activists G. Korov'yakov, I. Klimovich, M. Morozov and others, the TECh chief struggled decisively against the shortcomings.

They started with the strengthening of discipline. They increased the demands placed upon the officer leaders for the instruction and indoctrination of the personnel. They began to listen to them more frequently at sessions of the party bureau. The most skilled officers without fail spoke at service meetings about the experience of working with subordinates and on the performing of labor-intensive operations. And things got off dead center. In the TECh they began to deal most severely with those who committed violations or infractions. The quality of repair and other maintenance jobs improved noticeably.

The well organized socialist competition played a major role in normalizing the situation in the TECh. It was aimed at improving the professional skills of each man, and reducing the time for executing the various jobs with a high quality for them.

An important role was played by the precise observance of the basic principles of the socialist competition: publicity and comparison of results, and repetition of advanced experience. For this, in summing up the results, the TECh chief mentioned not only the quantitative indicators, but also described the ways for achieving them, constantly paying attention to the proper smartness of each man, his discipline and efficiency, and the solidarity of the collective.

In order to increase the class rating of the specialists, the training facilities were improved. The best rationalizers in the subunit, officers A. Goverdovskiy and V. Vyshegorodtsev, and Guards MO V. Ignatkov, made original trainers and working stands which helped explain the essence of the physical processes occurring in various systems. During the period of preparing for exams, the competition winners S. Sakharov, A. Veselov, A. Shirokov and many others shared their experience with the youth.

And results were not long in coming. At present in the TECh the number of masters, specialists 1st and 2d class and soldiers who have mastered related specialties has increased noticeably. Many rationalization proposals have been introduced. And the collective has won a worthy victory, it has won the title of outstanding.

Yes, Logvinov is proud of his subordinates. The guardsmen have merited this. It was now fully night, but they continued to work at daytime standards.

"Comrade major, take a look," called a group chief.

Logvinov went up to the specialist.

"The gasket is not where it should be," said the mechanic who performed the job shamefacedly.

"No one is accusing you," replied Logvinov.

"Other specialists are to blame for the defect. You must...." Having issued instructions, the TECh chief opened his notebook and made the necessary entries.

Having eliminated the flaw, the technicians and mechanics began assembly. The sun was coming up. Its bright rays touched the silver surface of the missile-carrying aircraft. The minute was approaching for the sake of which the specialists had worked all night through, when the aircraft would again be back on line.

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## ROLE OF PROPER FLIGHT DISCIPLINE STRESSED

Moscow AVIATSIYA I KOSMONAVTIKA in Russian No 12, 1979 pp 34-35

[Article by Capt V. Usol'tsev: "On Whom Luck Shines"]

[Text] Sr Lt Prokhorov came out of the office of the regimental commander upset, with the words of the colonel ringing in his ears:

"For the sake of obtaining an excellent grade you forgot about flight safety? I feel that 2 weeks will be enough for you to think out what has happened. Then you will personally report to me for your flight qualification exams."

Nikolay [Prokhorov] sat down on a bench standing not far from the staff headquarters. "You have flown a little, Prokhorov," he thought, "but you became complacent. And who would have supposed this would happen?"

...The mission for Military Pilot 2d Class N. Prokhorov was a difficult but generally ordinary one. He had to intercept the target and engage the "enemy" in combat, and here the role of the enemy would be played by the unit deputy commander, one of the regiment's best air fighters. Nikolay had carried out a number of such flights, and recently only with excellent grades. And he did not doubt his success this time.

With the help of the control tower, Prokhorov located the target aircraft at the designated line. Having reported to the ground about this, he immediately began to maneuver for the attack. From how the "enemy" altered course, altitude and speed, the pilot without error determined what the enemy intended.

"No matter, I will act when I am dead certain," decided Nikolay. But as soon as he had assumed a position advantageous for camera gunnery, the target maneuvered and so energetically that it almost escaped the radar sight.

"This is what experience means," thought Prokhorov about his fellow serviceman with respect. "But I am not going to lose him."

And the second attempt to achieve victory also was unsuccessful. And at the same time the "violator" was constantly coming closer to the defended installation. And the fuel supply on board was dropping rapidly.

"Will I really bring back an empty film?" wondered the young pilot. "No, that I won't!"

Prokhorov activated the afterburning and creating a deep bank for the fighter, energetically pulled back on the controls. The rapidly rising G-load pushed his body into the seat. The aircraft shook slightly, and then stalled. Then sensing he was wrong, Nikolay instantly released the controls.

"I made it and I didn't fail," thought the pilot happily. The sensation was as though a heavy burden had fallen off his shoulders. And at the next instant Nikolay saw the "enemy" fighter within range to open fire. Adjusting the sight without delay, the senior lieutenant pushed the firing button.

"The film will be excellent. It is only a pity that I didn't get the target on the first attack. But no matter, I still won out over the regiment deputy commander. Not everyone can do this."

Prokhorov's heart was beating rapidly. But then the thought flashed in his mind that the aircraft had gone beyond the critical angles of attack. Nikolay calmed himself: "The stall and the preceding shaking of the fighter were merely an accident. Certainly I did everything correctly."

"How are things?" asked the flight commander as soon as Sr Lt Prokhorov had left the cockpit after shutting down the engine.

"The mission was carried out normally," replied the pilot.

The film actually was excellent. However, having decoded the recording of the SARPP [automatic flight monitoring system], the specialists without any difficulty established that Prokhorov had exceed the G-load, causing the fighter to slip. When the pilot was told of this, he replied:

"Nothing of the sort happened, obviously the SARPP has malfunctioned."

"In my opinion, your aircraft stalled in the third maneuver," commented the unit deputy commander who was flying as the target.

"I performed the maneuver as required," insisted Prokhorov.

Later there was a flight analysis. And again the senior lieuetnant did not want to admit that he had made an error which had created a very serious threat to flight safety. And after this there was the talk in the office of the regimental commander.

Nikolay sighed deeply. He reached for his pack of cigarettes. Then, having fought a second, angrily he crushed it in his fist and abruptly threw it into the ashtray. Turning his head to the left, he saw someone else sitting on the other end of the bench. It was Sr Lt Grigoriy Yermilov. The entire time that Nikolay was engrossed in his thoughts, he had been sitting nearby in silence. In the glance of his comrade, Prokhorov felt sympathy.

"Well, what has happened?" asked Yermilov.

"I have been grounded for 2 weeks."

"You got off easily, it could have been worse."

"Two weeks out of the airplane cockpit, when everyone is flying, you know yourself what torture it is. And then I have to take the exam from the regimental commander," said Prokhorov bitterly. "And for several months, if not longer, this will be remembered in summing up the results."

"What good is it of talking about this, certainly you have only yourself to blame, Nikolay."

Prokhorov jumped up. His face was covered in red blotches.

"And you are accusing me? And my friend. Oh!.."

Prokhorov turned sharply and went off toward the BOQ. Grigoriy watched him for a long time. He had certainly not expected such a stormy response to a just criticism. Certainly for many years they had lived and worked shoulder to shoulder.

Both in school and in the regiment, Prokhorov had been more frequently praised than his fellow serviceman. He was the first to be retrained for a variable-wing fighter, he became a military pilot 2d class, and was the first to be promoted. And the relative ease of achieving all these goals had given rise to overconfidence. He believed in his exceptionality. And at the same time in flying Prokhorov had begun to make mistakes, at times substantial ones. And now this major failure.

"He should have been told in school that with such conduct he could squander his abilities," said Yermilov to himself. "But no matter, it is not too late now. Nikolay is a smart man, he understands everything."

A bitter aftertaste from the quarrel remained with Grigoriy. Yermilov fell asleep toward morning, and for the first time in recent years was pleased that there would be no flights on the next day. And in the morning, spotting Prokhorov, he immediately realized that he had slept badly during the night and had relived what had happened.

"Let's go over there and talk a bit," called Grigoriy to his comrade.

"Let's," said Prokhorov unwillingly, and in his eyes Yermilov read: "Well, what do you want to say to me?"

"Do you remember how we dreamed about flying and about the profession of a pilot?" began Grigoriy.

"What is the reason for these childhood memories? Who needs them?" broke in Nikolay.

"Oh well, that was true. I remember how you used to explain to me that success would come only to the strong and the confident," as if not noticing the sharpness in Nikolay's reply, Yermilov continued. "You know I want to add something to those words."

Sr Lt Prokhorov looked with surprise at his fellow serviceman.

"I have thought a good deal and am certain that success in flights is impossible without tenacity and industry. Confidence is a good thing, but only when it does not turn into overconfidence. The person who forgets this cannot avoid failures. And you have lessened your flight preparations, and on the trainer last time you did not do the exercise properly. How many times did the commander rebuke you."

"I have nothing to learn, I am not a child," said Prokhorov sharply. "I had my teacher."

"Listen, Nikolay, don't get all heated up," Yermilov stopped him. "I am certain that if you better modeled the variations of the maneuvers in the battle against the regiment deputy commander, you would be able to get the better of him in the first attack. I have checked the calculations. It turns out that you have forgotten theory completely. And without it you will not get far."

"Let us end this talk," rejoined Prokhorov. "It will not do any good."

A second talk between the friends also did not succeed. No, Nikolay could not immediately agree with Yermilov. "Just a minute, I began to prepare for the flights just a little worse," he argued. "And you mentioned the trainer. This had happened before, and I almost always carried out the missions successfully."

But Grigoriy's words still aroused doubts in Prokhorov's heart. In order to eradicate them and be finally convinced of his correctness, the pilot sat down to analyze the unsuccessful flight and work out the possible variations for the attack of the interceptor and the maneuvers of the target. But no matter how he tried to find justification, the calculations affirmed that the truth was on Yermilov's side.

"And how is this for a twist?" thought Prokhorov disturbed. "Hence I have been stubborn in vain. Yes, one does not quarrel with the facts. But what to do now?" the officer wondered.

Time suggested the solution.

The regiment was participating in exercises, and the pilots had to make several sorties daily. They began to grow tired, but were happy with the plight which their beloved work brought them. And immediately after the flights they prepared for new ones. And watching them, Sr Lt Prokhorov also did not waste time. In the classrooms, in the trainer and at the airfield he developed irresistible air attacks.

Prokhorov met Yermilov near the high-altitude hut. The officers, as though there had been no differences between them, shook hands. Nikolay asked:

"How did you do, Grigoriy?"

"I am satisfied, although frankly speaking it was difficult," said Yermilov with a smile flashing across his tanned face.

"I still have some time to kill, but soon I will take the exams with the commander and then back into the skies," said Prokhorov. After a moment's silence, he

admitted: "I am ashamed to look you in the eyes. How could I believe so blindly in my infallibility!" And, having given it up as a bad job, he turned away out of annoyance.

And the landing strip lay directly ahead of him. Quiet now, it seemed to call him to future flights.

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## ADVICE TO YOUTH ON FLIGHT CAREERS GIVEN

Moscow AVIATSIYA I KOSMONAVTIKA in Russian No 12, 1979 pp 42-43

[Article by Maj Gen Avn (Res) P. Peskov, Hero of the Soviet Union: "For Young Men Who Dream of Flying"]

[Text] How can one better prepare for being admitted to a higher military aviation school? What subjects and what types of sports should be studied particularly? The published article provides answers to these and other questions of the 10th grader Yuriy Uryupin and his classmates.

As is known, future military fliers undergo training in higher military aviation schools with a period of instruction of 4 years. They study political, physico-mathematical, military and special disciplines. They fly on training and combat jet aircraft. Upon completing the school, the graduates are given the officer rank of "lieutenant," and are presented with the national diploma for a higher education with the skill of pilot-engineer.

Many young men dream of becoming fliers, the conquerors of heights and speeds. But this dream should be reinforced by serious preparations for admission to the school. Here it is important to be clearly aware that the profession of a flier is in no way the reserve of the elite. A predominant majority of young people are fully capable with the proper tenacity and effort of fully mastering flying on the most modern aircraft and helicopters.

How can one better prepare for admission to an Air Force flight school? Probably one must begin with choosing the school in accord with one's inclinations. Here one can be helped by the announcements on the admission of officer candidates to the military air schools which are published annually in January-February in the newspapers KRASNAYA ZVEZDA, KOMSOMOL'SKAYA PRAVDA and the aviation journals. At the military commissariat it is also possible to become familiar with the admission conditions and rules.

The applicants take entrance exams and undergo a medical examination. They are checked for physical training and undergo a psychological examination.

The entrance exams are given on mathematics (written and oral), physics (oral), Russian language and literature (written) on a level of the curriculum of a general education school. The exams are competitive. The average number of points on the

school certificate along with the results of the entrance exams are considered in deciding on admission.

In the mathematics exams, they test the knowledge and ability of the applicant to prove theorems and derive formulas, and to accurately and concisely express mathematical thoughts both verbally and in writing. In the Air Force schools, serious attention is paid to the subject of higher mathematics. A knowledge of it is essential for studying the aircraft, the engine, the automatic systems, flight theory and other special disciplines.

For this reason while in secondary school, it is essential to pay attention to the development of mathematical thinking, and to independently study the deriving of formulas and the proof of theorems. Of great benefit is the solving of problems, equations and systems of equations by various methods with their subsequent analysis and the selection of the optimum ways of solving. Here it is very important to answer the questions: does the problem have only one solution and how can others be found. It is essential to train more in drawing geometric figures, constructing their sections, and handling vectors.

Physics is a basic subject in the preparation of a future flier. All its areas are equally important for understanding the principles of flight, the design of an aircraft and the functioning of its most involved systems. The main thing is to understand the essence of the physical phenomena and processes. It is equally important to know the definitions and purpose of the basic physical concepts and laws. These problems must be solved independently with the repetition of the basic laws, the examination of the physical essence and analysis of the obtained results. It is essential to know the international system of units and be able to use it. In addition, it is essential to have knowledge on the history of the major discoveries in the area of physics.

The examination for the Russian language is given in the form of a written composition on one of three or four sociopolitical and literary subjects. They are chosen from the works included in the secondary school curriculum. The purpose of the examination is to determine the degree of political maturity, the literacy of the applicants, as well as establish how well they know literature, and are able to assess the sociopolitical and ideological import of a work. The limited time of 3 hours is allocated for the composition. In preparing for this test, a great deal of attention must be given to the logical construction of sentences, for incorrectly constructed clauses, the wrong use of words and the imprecise expression of an idea are the most typical errors of the applicants.

The young men who desire to be admitted to aviation schools must remember that after the completing of school little time remains for preparation, as during the first days of July the applicants travel to the VUZes and for this reason must make a maximum effort to gain the knowledge at school.

The state of health is of primary importance in the flying profession. The aviation medical board (VLK) goes over all persons arriving at the school regardless of the results of the medical certification at the military commissariats. As a rule, the VLK are held prior to the taking of the entrance exams for the purpose of determining the fitness of the applicant for flight training.

It is essential to bear in mind that flight schools do not admit young men with height, weight or foot size that do not meet the medical requirements set in aviation. These requirements are caused by the design features of aircraft and helicopter cockpits. Contraindications for admission to school include deviations in the organs of vision or ear, nose and throat, gastrointestinal illnesses, unstable blood pressure, and curvature of the spine.

Young men who plan to dedicate themselves to flying should see a physician ahead of time and if possible improve their health by treatment of physical exercises. It is very important to protect oneself against colds and avoid home cures in order to prevent residual symptoms. One should not read in a bad light or lying in bed.

The maintaining and strengthening of health depend directly upon participation in physical culture and sports. The physical preparedness of the school applicants is checked on the level of the individual standards of the GTO (Ready for Labor and Defense) complex. Good physical condition can be achieved only in the process of regular exercises at school and in extracurricular time. For future aviators, the preferable sports are track, acrobatics, swimming, diving, volleyball and basketball, as well as exercises on swinging and spinning gear. These types of sports tell positively on general development, the improving of movement coordination, the development of the vestibular apparatus, spatial orientation and reaction. Not recommended are the exercises involving sharp shifts in the condition of the organism such as weightlifting boxing or other similar sports.

Flights on modern aircraft also place high demands on the psychological sphere of a pilot. He should quickly assess a situation and act precisely. Here the crucial role is played by attention, thought, memory and perception in any complicated situation.

The purpose of the psychological examination is to detect the candidates which are capable of mastering flying with the least difficulties. Psychological selection is carried out using specially elaborated procedures which are based upon the performing of a certain mental job or a practical action with or without interference.

Since abilities are shaped under the influence of the specific conditions of life and activity, certain types of training will without doubt be useful for successfully passing the psychological selection. Of great help can be training in counting forwards and backwards or in any other combinations, locating the same letters in a text, and remembering a number of subjects at first glance.

It is wise to perform predetermined movements of the head, arms or feet at given signals, and train in reading the indications of various instruments which can be conditionally depicted on paper. The training program can be drawn up by oneself or using the advice of psychologists and physicians considering individual abilities.

After the exams and examinations, the admission commission carefully examines the obtained results and recommendations, and makes its final decisions on admission. The worthiest and most able become officer candidates.

With other conditions being equal, preference is given to candidates who have been sent under the national Komsomol sponsorships, to leading workers and kolkhoz members, to the graduates of youth military patriotic schools, to those who have been

awarded honors diplomas for the completion of secondary school, and to active participants in various groups, olympiads competitions and reviews.

It is a great honor and recognition to be an officer candidate in a higher military aviation school. From this moment a new stage of life begins which opens up the way to realizing the dream of flying.

But, a person who has not succeeded at first in gaining admission to a school can be counseled not to lose heart, but rather to prepare oneself with even greater energy and tenacity for the flying profession.

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## AIR FORCE GENERAL URGES GREATER ROLE FOR INDOCTRINATION

Moscow AVIATSIYA I KOSMONAVTIKA in Russian No 1, 1980 pp 1-3

[Article by Col Gen Avn I. Moroz, Hero of the Soviet Union: "Higher Ideological Conditioning for Aviators"]

[Text] Our motherland has entered the new year of 1980, the final year of the Tenth Five-Year Plan. During these days the Soviet people are at work with enormous enthusiasm and with a high patriotic upsurge. Under the leadership of the Leninist party, they are constantly struggling to carry out the historic decisions of the 25th CPSU Congress. Our nation has achieved a development level of the national economy and social relations and a degree of moral and political unity among the Soviet society where a firm base has been created for a new strong upsurge in the nation's material and spiritual forces.

The loyal sons of the people, the Soviet military, share the same thoughts. They celebrated the start of the new training year by further broadening the socialist competition to properly celebrate the 110th anniversary of the birthday of V. I. Lenin and the 35th anniversary of the victory in the Great Patriotic War.

Our military is proud that they belong to the glorious Soviet Armed Forces which were born out of the Great October Revolution. V. I. Lenin and the CPSU, in creating a new type of army, proceeded from the view that its combat might was inconceivable without party leadership and party influence on all aspects of life, and without the political indoctrination of the men, and their profound understanding of the noble aims of defending the socialist fatherland.

The feats of the frontline heroes clearly disclosed the great strength of spirit of the Soviet soldiers who in fierce battles against the enemy on the land and in the air courageously defended the honor, liberty and independence of the motherland. They also showed the communist convictions instilled in them by the Leninist party. For a feat, as Comrade L. I. Brezhnev has stressed, "is not an irresponsible action, but rather the conviction of the rectitude and greatness of a cause for which a man consciously gives up his life."

The remarkable moral-political qualities of the Soviet people have been shaped as a result of the protracted purposeful efforts of our party in the area of communist indoctrination on the firm foundation of Marxism-Leninism. In our times as never before, the authority of the teachings of Marx, Engels and Lenin is high, and the power of its ideological effect and the force of the example of real

socialism are great. The main feature in the activities of the CPSU as a party of scientific communism is an organic combining of the theory of Marxism-Leninism with the revolutionary practices of the working class and with the historic creativity of the masses of people. Loyalty to the principles of Marxism-Leninism, theoretical strength and also enormous experience arm the Communist Party with an exceptional capacity for scientific foresight. This has been substantiated by the entire course of modern historical development. The ideas of the great teachings, having captured the minds of millions of people, have become their lode star and compass in life and labor.

The entire history of the Great Patriotic War and the whole heroic path followed by our Armed Forces show that the strength of our military resides in their ardent love for the motherland, in their profound political awareness, ideological conditioning, and close solidarity around the party. Communist conviction is the main, determining feature in the moral make-up of the Soviet military, and has always been and remains the source of their unbreakable will for victory. It inspires, it arouses the armed defenders of the motherland, it multiplies their forces, and inspires them to feats in combat and unstinting military service in peacetime.

Our Leninist party proceeds from the view that the great cause of building communism cannot make headway without the all-round development of man himself and that without a high level of culture, education, social awareness and the inner maturity of people, communism is impossible just as it is impossible without the corresponding material and technical base. "To indoctrinate a person," pointed out Comrade L. I. Brezhnev, "in the aspiration for high social aims, ideological conviction, and a truly creative attitude toward labor--this is one of the primary tasks. Here lies a very important front in the struggle for communism, and the course of economic development and the socioeconomic development of the nation to an ever-greater degree will depend on our victories on this front."

These conclusions have found their embodiment, development and concretization in the Decree of the CPSU Central Committee "On Further Improving Ideological and Political Indoctrination Work" and which is an important marker along the path of forming a new man, and raises all the spiritual life of society to a higher level. This very important party document has shown that the course of the economic, socio-political and cultural development of the nation, the full realization of the possibilities of developed socialism, the realization of the Leninist foreign policy of the Soviet Union and the strengthening of its international positions to an ever-greater degree depend upon the successes in ideological and political indoctrination work.

The core of the ideological and political indoctrination work has been and remains to develop in the Soviet people a scientific ideology, undivided loyalty to the cause of the party and to communist ideals, love for the motherland and proletarian internationalism.

In his speech "A Cause of the Entire Party" at the All-Union Conference of Ideological Workers, Comrade M. A. Suslov pointed out that the task consists primarily in achieving a more profound and complete understanding of the urgent questions in the theory and policy of the party by the broadest masses. A study of the fundamental, basic provisions of Marxism-Leninism should lead precisely to a broadening of viewpoint, and to a rise in the political culture of the workers. Here we should proceed from the principle of a unity of cognitive and practical activities. For

this reason the Central Committee decree demands that knowledge be turned into conviction, into a guide for action, and into an active vital position of the Soviet man who, in showing high awareness, dedicates his efforts to the common cause and irreconcilably works against any manifestations of an alien ideology and morality.

The program aims of the party in the area of forming a communist awareness in the Soviet people are fundamental for ideological and political indoctrination work in the Soviet Armed Forces.

The commanders, the political workers and the party organizations of the aviation units and subunits have viewed the Decree of the CPSU Central Committee "On a Further Improvement in Ideological and Political Indoctrination Work" as a major political document and as a guide to action. In the Air Force units and schools, extensive work is being carried out to further raise the effectiveness and quality of political indoctrination. The party organizations are focusing attention on carrying out those urgent tasks which were raised by the CPSU Central Committee.

One of these primary tasks is to ensure a high scientific level of propaganda and agitation. In speaking before the military aviators, it is essential to clearly show the greatness of communist ideals, the all-conquering force of Marxism-Leninism, the fruitful and unflagging activities of the CPSU to strengthen the might of the Soviet motherland and increase the prosperity of the people, the historic advantages of socialism and its true democracy and humanitarianism, and instill in the aviators a feeling of pride for the socialist fatherland and unshakable fraternal friendship of the Soviet peoples.

One of the most important tasks, the decree of the CPSU Central Committee emphasizes, is to strengthen the effectiveness and concreteness of agitation and propaganda and their link with life and with the solving of economic and political problems. This obliges us to carry out ideological work in such a manner that it be organically linked to the tasks being carried out in military and political training. All the work carried out in the aviation units and subunits to implement the decree of the CPSU Central Committee is aimed at successfully fulfilling the military and political training plans and the socialist obligations, and at further strengthening military discipline and order, and increasing vigilance.

Under the conditions of the Armed Forces, of special importance is the demand of the CPSU Central Committee to develop an offensive type of propaganda and agitation and with all decisiveness to unmask the imperialist proponents of the Cold War, of aggravating international tension and increasing the arms race. The lectures, talks and briefings must bring out the antipopular and misanthropic essence of modern capitalism, the predatory nature of the policy of neocolonialism, and the true nature of the hypocritical defenders of "rights" and "freedoms." The military aviator should have a good understanding of the events of domestic and international life, and endeavor to make as great a contribution as possible to strengthening the defense capability of the nation and its Armed Forces.

One of the effective forms for carrying out this task and which has been widely spread and approved by the CPSU Central Committee is the holding of common political days. In speaking in the subunits, the commanders, political workers, the officers of the staffs and services, and the leaders of the local soviet, party and Komsomol organizations explain to the troops the urgent problems of party policy

at the present stage. They inform the personnel of the successes of communist construction in the nation, of the military political situation in the world, the course of carrying out the military and political training plans, and the ways and means for further increasing the combat readiness of the units and subunits.

The common political days significantly broaden the scale of political information. They help the party's word reach every military aviator. At the same time the measures carried out on this day serve as a means of studying the mood of the men, their requests, proposals, and desires, and for maintaining close contact between the leaders and the men and a lively communication between them.

The strength and importance of our propaganda are determined by the fact that it shapes a Marxist-Leninist ideology, and must arm the Soviet people with the invincible weapon of historical truth and a profound understanding of the laws and prospects of social development. But ideological loyalty and communist conviction do not come spontaneously. They are achieved by a thorough understanding of Marxist-Leninist theory and the great truth of our life, and they are inseparable from a scientific ideology and the political maturity of a man. The decree of the CPSU Central Committee points to the necessity of thoroughly studying the works of K. Marx, F. Engels and V. I. Lenin, the history of the CPSU, the documents of the party congresses, and the works of Comrade L. I. Brezhnev and the other party leaders. Only on this basis is it possible to develop in oneself a Marxist-Leninist ideology, a clear awareness and understanding of our great communist goals and the ways and means of achieving them. Proceeding from this, each military aviator should show a most serious attitude toward his political studies, he must be constantly engaged in political self-education, systematically and continuously assimilate knowledge, broaden his viewpoint and enrich himself spiritually.

Particular attention should be paid to independent work with books, to a profound analysis of modern political problems and their practical tasks, as a result of which knowledge becomes profound and strong, and is turned into convictions. V. I. Lenin pointed out that only by learning to investigate complicated political questions independently can one consider oneself sufficiently firm in one's convictions and defend them with sufficient success before anyone whosoever or whenever.

At the same time it is essential to always remember that communist conviction is not determined merely by theoretical training. Ideological convictions are not merely a grab-bag of knowledge. This also means a desire to think, and, as V. I. Lenin emphasized in the speech "The Tasks of the Youth Unions" an ability to act in a manner as communism actually requires. The ideological conviction of a person will always be judged by his actions and not from his words. "Enterprising, creative involvement in labor and social life," points out the decree of the CPSU Central Committee, "is an indicator of the ideological and civil maturity of a person." As steel is tempered in a fire, so ideological conviction is strengthened in labor and in struggle, in the crucible of practice and life's situations. A knowledge of revolutionary theory and of party policy should be turned into a conviction of the military aviator, into an active vital position of a steadfast fighter for communism, and should be embodied in an excellent knowledge of the aviation equipment and weapons, in strong discipline, high awareness, in a feeling of personal responsibility for the assigned job, and in a constant readiness to come to the defense of the socialist motherland.

Enormous experience in working with people and in developing communist awareness in them can be found in the books of Comrade L. I. Brezhnev "Aktual'nyye Voprosy Ideologicheskoy Raboty KPSS" [Urgent Problems of CPSU Ideological Work], "Na Strazhe Mira i Sotsializma" [On Guard for Peace and Socialism], "Malaya Zemlya" [Little Earth], "Vozrozhdeniye" [Rebirth] and "Tselina" [Virgin Land]. They teach us the art of working with people, to penetrate into the essence of the real problems of life, and the ability to carry out the indoctrination of Soviet people effectively and purposefully. A Leninist style of work which is based upon the closeness of the leader with the people, and a close and constant contact with them create a good atmosphere for the development of initiative, for a creative upsurge in the collective, and for mobilizing all its spiritual forces to carry out the posed tasks.

Precisely such an atmosphere is characteristic for the aviation unit under the command of military pilot 1st class, Lt Col V. Suvorov. In the relations of the chiefs and subordinates, the senior and junior in this collective one can feel a spirit of mutual respect and trust, a militant spirit and optimism. Party insight and the ability to find the way to the hearts of subordinates and to create a good working situation make it possible for the commanders and political workers to ensure strict discipline and a precise organization of training, indoctrination, service and everyday life. The healthy moral atmosphere established in the collective has helped to achieve high indicators in military and political training and in the socialist competition. Last year the regiment won the title of outstanding.

The impact on the mass of soldiers and the effectiveness of ideological and political indoctrination work are directly dependent upon what example is set by the commander or political worker in service and in his conduct. How does the officer behave in front of the men and what challenge does he provide? To what degree do his personal conduct and attitude toward service conform to these challenges? Is he able to effectively and professionally respond to criticism and in a principled manner solve urgent questions?

People always gravitate to an enterprising, creatively thinking, competent leader who sees the future and can carry a commenced undertaking to its end. Such qualities are possessed, for example, by the political worker and military pilot 1st class, Lt Col A. Kostarev. Characteristic for him are the ability not only to profoundly and meaningfully speak to the men, but also to organize the close work of the collective, irreconcilability for shortcomings, humility and respect for others. The active vital position and communist conviction of the military aviators are expressed in their daily struggle for high quality and effectiveness of military and political training and for achieving high indicators in training and service.

To be the ideal for a soldier means to view one's daily military activities as a particle of the nationwide struggle for communism, to be an ardent patriot and internationalist, an active and aware fighter for the greatest possible rise in combat readiness, and to preserve and add to the military traditions.

During the last training year, in the Air Force there was a rise in the number of outstanding units and subunits and class specialists, and the air skills of the personnel rose. The results achieved for today are far from the limit in the possibilities for further improving effectiveness and the quality of military and political training, and for seeking out new forms and methods for raising

professional skills. During the new training year the military aviators are confronted with great and responsible tasks. There must be a further rise in the military skills of the aviators and the combat readiness of the units and subunits. The experience of the leading units shows that where constant attention is given to the ideological strengthening of the men from the very first days of the training year, where this work is carried out in a thoughtful and purposeful manner, here the indicators in military and political training are higher.

In being guided by the instructions of the 25th CPSU Congress and by the requirements of the Decree of the CPSU Central Committee "On Further Improving Ideological and Political Indoctrination Work," the commanders, the political bodies and the party and Komsomol organizations must constantly work for effectiveness in ideological work, they must closely link it with the life and practices of communist construction and with the tasks confronting the Air Force, and they must be constantly concerned that the profound convictions of people are turned into concrete deeds, that the military collectives become more closely united, and the discipline and organization of the personnel rise. It is essential to constantly endeavor that all the means of ideological influence on the reason and heart of the military aviator raise their social activeness and induce them to honestly and conscientiously carry out their duty to the motherland.

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## GREATER ROLE FOR CLASSROOM TRAINING FOR COMBAT URGED

**Moscow AVIATSIYA I KOSMONAVTIKA** in Russian No 1, 1980 pp 6-7

[Article by Maj Gen Avn V. Sokolov, Honored Military Pilot of the USSR: "In the Classroom and Over the Battlefield"]

[Text] The well-known formula of "equipment--aerodynamics--tactics" reflects the unity of theoretical knowledge and skills of an air fighter. Experience shows that any, even the slightest flaw or omission in one of the components of the formula can directly influence the outcome of battle.

In order to carry out the set mission, the flight personnel steadily and carefully works, studying the operated airplanes or helicopters, their technical, piloting and combat capabilities, and works out the tactical procedures for crossing "enemy" air defenses, and detecting and surely destroying the set targets. Also of great significance is the precise organization of the training process, when the training facilities are effectively utilized, and the theoretical exercises and training are carefully planned.

At present, in the units a great deal has been done to improve the training facilities. Classrooms with operating models and stands are widely found. Thus, in the fighter-bomber unit such stands have been connected to the airplane cockpit. The pilot, in operating the levers and switches in the cockpit, can visually check the accuracy and correctness of his actions. The flight personnel is proud of its training facilities, for they actually correspond to the operated equipment and make it possible to carry out many tasks related to the improving of piloting, gunnery and tactical skills.

In another regiment, the tactical classroom has been intelligently equipped. It also has various stands, models of the terrain, firing ranges and targets, and diagrams for the methods and tactical procedures for crossing the "enemy" air defenses, for combat maneuvering and attacks; there is much informative material on the equipment, the weapons and their use. However, in conducting the exercises in the classroom, all this equipment was not being employed dynamically. According to a decision of the pedagogical council, the models were fitted out with details of the terrain, markers, standard targets and air defense weapons as well as various attachments. And experience was borrowed from adjacent units. The additions made allowed the leader of the exercises to alter and complicate the situation. This forced the trainees to show creativity and initiative, and actively solve various problems.

For example, the commander of the outstanding flight, Capt P. Lazutin, in the classroom was greatly aided by the exercises in achieving stable results in combat training. Thus, at previous exercises, air reconnaissance detected a group of "enemy" helicopters at one of the areas. The flight of Capt Lazutin was given the mission to destroy them. How many times in the classroom using aircraft models in their hands had the pilots gone through such a mission? The conditions were altered, different variations were tried out, detailed calculations were made on the most effective battle formations as well as the methods and tactical procedures for destroying the target.

The fighter bombers took to the air. And although a dense haze impeded visibility, the group, having precisely executed the maneuver to cross the air defenses, arrived precisely at the designated area.

But it was not so simple to detect the "enemy" helicopters. The camouflage painting, the brush and the camouflage equipment made them almost indistinguishable. However, they were aided by the experience gained by the flight pilots in locating targets. Capt Lazutin detected the helicopters and coordinated them with characteristic markers. Next to the area was a forest, on the other side a swamp which could be clearly seen from the air. The flight commander knew well that if he did not do this, after executing the maneuver, it would be very difficult to attack the camouflaged targets.

There came the command: "On the left, on the edge of the forest. We are attacking from the left, one by one," and Capts N. Ragulin, A. Klenin and P. Yemel'yanov accurately carried out the order of their commander. Several seconds later there was a devastating strike. And here one could feel the steady, painstaking labor in the classroom, and a constant desire for high flight skills in the air. The flight executed the given mission excellently, and the group of "enemy" helicopters was completely destroyed. Subsequent analysis showed that the commander's plan under the given specific conditions was the most effective, and all the pilots of the flight carried it out skillfully.

The helicopter group led by Capt V. Podol'skiy was to make a strike against counter-attacking "enemy" battle formations. In order to prevent the advance of the tanks, the commander directing combat took a decision to open artillery defensive fire. A minute after the halting of artillery fire, the helicopters reached the missile launching line. But what did they see? Instead of the targets which should have been destroyed, ahead of them was a solid curtain of smoke and dust. From the low altitude it was impossible to detect the targets let alone make an aimed strike against them.

The group commander took a decision and gave the command to climb. But a hovering helicopter at a great height is an excellent target for the enemy.

Capt V. Podol'skiy is a first-rate air fighter and an intelligent commander. He and his subordinates had carried out difficult missions at the range with a high quality. Prior to the exercises he also conducted training with the pilots on working out the tactical procedures and methods for destroying the given targets. In the given instance what prevented the group from carrying out the mission?

At the previously conducted exercises, there had also been defensive artillery fire prior to the helicopter strikes. But, as a rule, this firing had been feigned.

The pilots had not imagined how a real moving barrage would effect the carrying out of the mission by the helicopters. In preparing for the sortie, they had not worked out in detail variations for attacking from the flanks, considering the wind. But the main thing was that the commander of the helicopter unit did not pay sufficient attention to the questions of the coordination of aviation and artillery, and this is very important in modern combined-arms combat.

Then the group of Lt Col M. Rodnin did not consider all the particular features and conditions of making the strike. As a result additional difficulties arose. The target was to be bombed in pairs. The distances between them had been calculated from the safety conditions in the shrapnel scatter zone from the bombs of the aircraft operating in front.

On that day the horizontal visibility was somewhat better than the vertical, and the leader took a decision to attack from level flight. Seemingly this was the correct plan, but the commander did not consider that after the explosion of large-caliber bombs, the target would be completely covered in smoke and dust. In this instance, the attack from level flight would be impossible for the subsequent pairs. And in fact this is what happened. It was a consequence of a mistake in preparing for the flight in the classroom and the failure to think through the mission. The problem was that if the group leader, after a report from the wingman of the pair that the target could not be seen behind the smoke and dust, had given the command for the subsequent pairs to execute a diving attack, the conditions for hitting the target would have been significantly better.

In carrying out missions related to hitting moving targets, as a rule, provision is made for additional reconnaissance. Additional reconnaissance can simplify the execution of the mission for the strike group, if it promptly provides information on the presence and position of the target, and fixes it to a characteristic marker, as Capt Lazutin had done, and determines, depending upon the conditions, how it is best attacked. Having such information, the group leader can ahead of time take the best decision for reliably destroying the target.

In the process of training in the classrooms and in preparing for flights, great importance is assumed by the ability of a pilot to program and model his mission, and I would say, every element of it, and make the necessary calculations. This is a subject of a major discussion. I will merely take up how sometimes the calculations are employed in a flight.

The group of Maj A. Lantsov was preparing to attack one of the targets on the range. In inspecting their readiness, the unit commander did not discover any flaws in the preparation of the pilots. The pilots confidently reported the procedure for executing the mission, and gave calculations for the flight along the route, maneuvering in crossing the air defenses, and variations for executing the attacks.

The group did not arrive at the range at the designated time. To the question of the air controller at the range: "Where are you?" Maj A. Lantsov replied: "I am approaching the target." But on the radar it could be seen that the group was moving away from the range.

Naturally, work at the range was shut down, and the group under strict radar control was returned to the airfield. The mission was not carried out. This fact caused great concern. Why was a trained pilot under visual weather conditions on an aircraft equipped with modern navigation gear unable to reach the target?

It turned out that during the flight the pilot had not used the capabilities of the equipment and those calculations which he had made in the process of preparation. Moreover, he did not monitor the route.

The equipment of modern aircraft provides high accuracy of navigation, but unfortunately, certain pilots, in blindly trusting the "smart" systems, have begun to forget the monitoring of course, speed and flight time in combination with visual orientation and the use of radioelectronics. Maj Lantsov drew the correct conclusions for himself, and this was clearly substantiated by the carrying out of subsequent flight missions. Obviously other pilots should also draw these conclusions.

The successful outcome of air combat or a strike against a ground target depends upon many factors. It is very important to have an excellent knowledge of the aviation equipment, aerodynamics and tactics. Firm knowledge obtained on the ground make it possible in a short period of time and with great effectiveness to master the mighty combat aviation equipment in the air.

To teach what is required in war means to teach without oversimplification and weaknesses, to study the experience of the frontline soldiers, to assemble piecemeal the experience of combat training in peacetime, and introduce it into the training practices of the aviators.

The USSR Minister of Defense, Mar SU, Comrade D. P. Ustinov, has commented: "Of special significance in ensuring the combat readiness of the Armed Forces is the mastery by the personnel of the military equipment, which, as a rule, represents complicated combat systems and complexes. The enormous destructive might of the new weapons, the complexity of the technical controls for them and a means for countering similar enemy weapons, and the intense nature of modern combat operations on the ground, in the air and at sea demand from the Soviet military an excellent knowledge and ability to employ the individual and collective weapons with great effectiveness in any complicated situation. For this reason, the studying of the weapons and military equipment as well as the methods of employing them in combat and an operation is one of the most important tasks in combat training, and great attention is given to carrying it out."

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## WIDER USE OF GROUND TRAINER EQUIPMENT RECOMMENDED

Moscow AVIATSIYA I KOSMONAVTIKA in Russian No 1, 1980 pp 8-9

[Article by Col P. Lichagin, Military Sniper Pilot, and Maj V. Drozdov: "Standard Training Exercises"]

[Text] The tactical flight exercise was coming to its concluding stage, field firing at the range. Having taken off to intercept and destroy a high-speed radio-controlled target, Capt V. Sharonov soon returned to the airfield with his missiles. He blamed the specialists of the weapons group, considering them to be responsible for the fact that the missiles had not come free of the pylons. The engineers checked out the fighter and were convinced that during the attack, Officer Sharonov had mistakenly operated the wrong switch.

Why had this happened? Field firings require particularly careful preparation and firm, stable habits of operating the cockpit equipment. In relying on his previous experience, officer Sharonov prior to the tactical flight exercise showed a formal attitude toward training. At the same time, due to a certain break in this type of flights, he had lost his skills.

"So you see," said the weapons engineer at that time to Capt Sharonov, "you did not pay proper attention to your training and confused the buttons and switches."

The regimental commander temporarily grounded Sharonov. The captain was ordered to "fly" more on the ground. And this did the pilot good as the next time he precisely hit the airborne target.

We recalled this instance in reading the article by military pilot 1st class Lt Col V. Shiskin "The Shining Halo" (AVIATSIYA I KOSMONAVTIKA, No 9, 1979). It brought up the question of discipline in flying, and this, we feel, consists of many components. And far from the last of them is the precise, unquestioned observance of the requirements which are now being made on the organization and execution of training sessions on special equipment. And they are playing an ever-greater role in the training of skilled air fighters.

Certainly on a trainer there is no opportunity to copy a real flight in all its parameters. However, it is no great difficulty to precisely reproduce many of its elements on modern equipment. The benefit of flights on the ground is that the pilots, and above all the young ones, in the process of such training gain and reinforce the skills of able work with the cockpit equipment, and the various aircraft

systems and equipment, they broaden their attention span, and learn how to effectively allocate and shift it, generalize and effectively analyze incoming information, and effectively use it in the interests of successfully carrying out the received mission.

The squadron commander, military pilot 1st class Maj A. Belykh is constantly concerned for a maximum return from the exercises on trainers. In his subunit the training sessions are carefully planned and are systematically carried out. The air fighters are given missions on a differentiated basis, considering personal preparedness and the particular features of the forthcoming flight. Great attention is paid to developing actions with the occurrence of irregular situations on board. The results of each training session are analyzed in detail and the mistakes are considered for the purpose of their subsequent elimination.

The squadron headed by Officer Belykh for a long period of time has successfully carried out the flight preparation plan, and holds a leading place in the socialist competition. Of course, this is caused by many factors. But among them, the unit commander and his deputies inevitably mention the high quality of training sessions.

However this is not the approach to ground training in all the subunits. At one time I observed a completely different picture. Some pilots were working on flying in clouds, others the intercepting of an airborne target, and still others actions under special conditions. In a word, the exercises were different but the work of the pilots, unfortunately, was not marked by diversity, nor were the inputs which were given by the leader. And it turned out that an officer who had scores of combat battles to his account and a young pilot spent the same time on the trainer and worked virtually identically. And the advantage of a trainer is precisely that it provides an opportunity to hone elements of a flight selectively, and to secure a maximum return from the exercises.

Incidentally, certain instructors still adhere to the opinion of the low return from training sessions. Of course, they reach such an erroneous conclusion without justification. Certainly, not all missions can be carried out on a trainer. And real flight does differ from a simulated one. However the special equipment is indispensable in working out many important flight elements which are dangerous or cannot be executed in the sky. For example, take the starting up of the engine after it has flared out in the air or the emergency jettisoning of missiles. A pilot should be prepared for all of this ahead of time, but the skills can be acquired only on the ground. And everything should be repeated once, twice or three times until he can act precisely, efficiently and quickly in a difficult situation.

But naturally the aims are reached only by a commander who creatively approaches the organization of a training session. The air fighters gain little benefit if each training session is carried out routinely, against the same background, and with permanent inputs.

In the squadron where Capt Sharonov serves, the pilots have varying preparation. But from the entries in the training log, it can be seen that they spend approximately the same time on the exercises. Seemingly the training sessions were carried out precisely, there were no errors, and no one required additional "flights." But one has merely to leaf through the flight controller's log to see that this is far from the case. There were many errors, sometimes major ones.

Individual comrades endeavor to prove that flights on a trainer do not provide firm skills in operating the cockpit equipment of a combat aircraft. In one of the squadrons where, incidentally, there were the supporters of such a "theory," the following happened. Over a certain period of time, due to a number of circumstances, the pilots did not use a trainer. They basically carried out their exercises in the daytime, and for this reason they were restricted to training sessions in the fighter cockpits and the "flight walk-through" method.

But when nighttime flights started, it turned out that many pilots felt uncertain and confused the commands and reports. Then they reached the unanimous opinion that trainer exercises were essential. After several flights on them, the officers had polished up their habits of the effective handling of the incoming information and a rapid response to a changing situation. The quality of the exercises executed at night noticeably improved.

As can be seen, the shortcomings arose not due to the imperfection of the trainer equipment but rather to violations in the procedure and rules for operating it. And these violations are proof of low discipline and the inefficiency of individual officials. Let us give an example.

The classroom was bright and spacious. The young pilot, Lt A. Sytenko, was in the trainer cockpit. He was going through the elements of an instrument landing approach. And playing the role of the instructor...was a fellow serviceman. What could he teach his comrade, what mistakes would he note, and what experience would be shared if the knowledge and skills of the pilots were approximately the same?

This was the disregard of an inviolable educational rule which states that the subordinates are to be instructed by a flight or squadron commander and by experienced flight officers from the unit's headquarters. The absence of an instructor in the trainer leads to a situation where the mistakes made by the pilots are not fixed and not analyzed. There is no need to prove that such "training" does no real good. Even worse, the pilots gradually become accustomed to irresponsibility. And this is a lethal thing.

Combat training practices affirm that a pilot, no matter what class he may have, no matter how high his position, prior to flights must undergo training in the special equipment and in the aircraft cockpit. The unwavering observance of this requirement of the rules is an important indicator of both the discipline of flying as a whole and training, in particular. As an example take the Honored Military Pilot of the USSR, Col B. Staroverov, with whom one of us happened to serve. His skill was inspiring. "A natural air fighter," was how he was described by Col A. Stepanov who had been in service more than 40 years.

One had to see the preparations of Col Staroverov for the next flight. He sat in the trainer cockpit and accurately brought the "fighter" in close to the target. Everything went perfectly.

"Ideal," murmured one of the officers.

The "enemy" was rapidly attacked. But Staroverov remained dissatisfied.

"You realize it was not quite right. I was slow in turning," he said.

And again he went back to the cockpit. The training continued. Col Staroverov left the "fighter" only when everything had been worked out.

Aviation equipment is complicated, however it operates dependably. At present, breakdowns in the sky have become a rarity, but equipment still remains equipment. And this means that a pilot must be ready for any sort of unexpected events. Clearly no one would create them intentionally in the air. But an aviator who takes to the skies must constantly develop and hone his reactions and readiness to act quickly and decisively in special flight cases. For this, a trainer is simply indispensable. And it is completely employed in the outstanding air squadron commanded by Maj A. Belykh. Here the instructors keep careful watch over how the pilots respond to the most unexpected inputs. For example, in landing the command is given: "Go around for a second time!" In following the actions of the trainee, the commander makes an analysis. In modeling special cases, the task is made concrete: to achieve high training of the pilots, and to develop in them psychological stability in difficult situations.

One important detail. If a pilot begins to comment on his actions, as they say, by way of introduction, the instructor stops the officer and reminds him that in the air in such a situation it is essential to work clearly, decisively and rapidly. The leader of the training session by various ways attracts the attention of the trainee to the main task of the flight. Then he is suddenly put under conditions which require a sharp change in the procedure for allocating and shifting attention for assessing the developing situation and taking decisions. In analyzing the mistakes, without fail they study the dynamics of the development of the process as if from within, that is, where the pilot was looking just before the input, what he saw and how he acted.

Often on a trainer the pilots perform missions which are as yet beyond their capabilities. Here a definite aim is being pursued, that is, to teach them that with the mastery of firm knowledge and skills, they are capable of controlling the fighter under any situation.

Great importance is given to the ability to model the forthcoming mission. Certainly, it is not easy to select the optimum variation of actions or to consider the particular features and conditions for carrying out the exercise. But everyone has been convinced that this work is essential and useful.

The training of able air fighters is a complicated and many-sided process. Before allowing a pilot to fly, it is essential to consider everything, and not permit any weakening or deviations from the requirements of the laws which govern safe flying. The skillful use of trainer equipment and true discipline of training sessions to a significant degree make it possible to improve the effectiveness and quality of the training, and to produce real air fighters.

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## PERSONAL RELATIONS IN AIR UNIT DESCRIBED

Moscow AVIATSIYA I KOSMONAVTIKA in Russian No 1, 1980 p 10

[Article by Lt Col G. Il'in: "Toward the Highest Ranking"]

[Text] He pulled out of the attack. An impenetrable darkness surrounded the bomber. Only in the cockpit did the instrument dials glow softly. "What a night! You can't see a thing!" said Capt Kozhevnikov wiping the rivelets of sweat off his forehead with the back of his hand, and this habitual gesture relieved the tension. The attack had been difficult.

Kozhevnikov banked and while the aircraft was turning to its home course, he kept on thinking how the flight had gone for Sr Lt Aleksandr Pal'chikov. The youngest man in the flight had made a challenge to a competition to him, to Capt Kozhevnikov, a first-class military pilot. Anyone else in Kozhevnikov's place would have laughed in response, but Sergey Aleksandrovich [Kozhevnikov], a tactful man, accepted Pal'chikov's challenge without anger.

"Look, party organizer," laughed the flight commander, "the lieutenant is tricking you. Isn't that awful."

"Valeriy Ivanovich [Proskuryakov], we have nothing to fear. If our subordinates fly better than the instructors, that is an honor to their mentors," joked Kozhevnikov. "We would better deal with Dolyub."

"That is true," said Proskuryakov taking a swipe through the air. "Let the officer's court of honor deal with him."

"That is so," said Kozhevnikov reflectively. "But certainly he is a highly skilled specialist."

"The highest," affirmed Proskuryakov. He twirled a pencil in his fingers and added thoughtfully: "An expert. I cannot figure out how high professionalism and negligence can be found in the same person."

"I must say," agreed Kozhevnikov, "Dolyub is a contradictory person."

They fell silent, thinking about how to help the officer who had recently arrived in their collective and had already managed to show both his good and bad sides.

"Realize, Valeriy Ivanovich," said the partgruporg [party group organizer] suddenly, in narrowing his eyes, "obviously we couldn't help him realize the necessity of getting involved in the general work, to express himself in his job, and from the first days of service in the new position win the respect of comrades."

"Well, there is a grain of truth there," agreed Proskuryakov. "We must place him within limits that exclude the possibility of unworthy conduct. But how can we do this?"

"Let us assign him sponsorship over Sr Lt Barashin. Let him get involved in the work and help a comrade improve his class rating.... We can always handle the officer's court of honor."

Then they gave some thought as to how to create an atmosphere of general concern for the state of affairs in the collective. And it would be hard to imagine that quite recently the flight commander and the partgruporg had been divided by a bone of contention.

It must be said that the newly appointed flight commander had underestimated the role of the party organizer. However, if Kozhevnikov approached the commander with certain proposals, Proskuryakov carefully heard him out, approved and...then forgot about them. Kozhevnikov intuitively felt that the commander was being condescending, and internally resisted this, but, realizing Proskuryakov's high organizational abilities, endeavored to suppress his personal dislike for him.

"I am to blame," the partgruporg had repeatedly rebuked himself, analyzing his relations with the commander. "He does not see in me an assistant, and does not rely on the communists. He relies more on himself. Hence we must change the style of leadership of the party group."

Kozhevnikov knew that Proskuryakov was totally committed to making all the aviators in the flight, without exception, increase their class rating. And here the partgruporg decided to attempt to find a common tongue with the commander. He began to instruct the communists more often to conduct measures aimed at raising the technical knowledge of the specialists, and in his free time he worked with the soldiers and organized consultations for the crew navigators. Proskuryakov saw these innovations but was in no hurry to voice his opinion. Only once, as if joking, did he comment:

"The pilots really like working on the trainers. Is that your doing?"

Kozhevnikov shrugged, but did not say anything. The ice was already melting. At an inspection for the next training period, the flight aviators demonstrated profound theoretical knowledge, and three navigators and one aircraft technician passed the examinations for a higher class rating. Many aviation mechanics also became class specialists.

Sparse with praise, but just in all instances, Capt Proskuryakov in summing up the results had approving words to say about the work of the flight party group. But he did not mention the name of Capt Kozhevnikov. But Sergey Aleksandrovich did not even pay any attention. The main thing had been accomplished. From what was essentially a newly manned aviation flight at the start of the training year, a close

collective had developed in which the traditions of mutual aid and mutual help had been firmly established. But the partgruporg felt that in the flight there still was not that moral microclimate which determines the professional mood of each aviator and subordinates his thoughts to the common struggle for achieving the set goal.

Then Kozhevnikov proposed to Proskuryakov that an open party meeting be held. The latter immediately agreed. The meeting could scarcely be called stormy, but the partgruporg first spoke with each communist, and requested advice on how to better organize it and where the attention should be focused. And here was what he found out. The communists, Sr Lts V. Kovyazin, A. Gavrilov and others agreed with the view that it was time for the flight to fight for the title of outstanding. And it was resolved to make the moral indoctrination of the collective the basis.

But it is easier with the words than with the deeds. Suddenly, at the peak of the flights, in the error accounting log of the flight controller, the names of the flight pilots appeared one after another. The commander and the partgruporg long wracked their brains, seeking the cause of the failings. They checked how the pilots knew their landing actions, and the answers were correct. The result was the same on the trainer.

"The 'guilty party' is the high-altitude flights," proposed Kozhevnikov. "After them there is an unique psychological letdown. The crew was bombing on the range. They felt that was the end of it. But the flight ends after the landing."

Proskuryakov agreed with the partgruporg. They sought advice, and again studied the book "Letchik i Psichologiya" [The Pilot and Psychology], they recalled the recommendations of the textbook "Voyennaya Pedagogika i Psichologiya" [Military Pedagogics and Psychology], and became involved in individual work with the pilots and navigators. After each flight they scrupulously analyzed the data of the monitoring equipment, they investigated each error in detail, and carried out additional flights on the two-man trainers. And this helped. Specific work always provides positive results.

Nor did the partgruporg forget the technical personnel. Once after the flights he returned home with the senior aircraft technician A. Ivanov. The flights had ended successfully and the mood was good.

"Aleksandr Fedorovich [Ivanov]," said Kozhevnikov suddenly. "Could you give a guarantee that you will ready an aircraft for flights without any inspection remarks, let us say, for the period of instruction?"

Ivanov took several steps in silence, thinking over the words of the partgruporg.

"It is not so hard to give the guarantee," he said, looking straight into the squinting eyes of Kozhevnikov. "But what happens if all of a sudden I fail? Everything must be weighed. And obviously it is not only a question for me but also the entire technical personnel."

"Correct, for everyone. But we must start with you, the first-class specialist and Komsomol member."

The flight commander supported the initiative of the Komsomol members. And thus the flight gradually entered the ranks of the outstanding....

"Commander," Kozhevnikov heard the voice of the navigator. "Far marker."

Ahead, on the horizon, glowed the colored lights of the airfield. The pilot began the maneuver for the landing approach. From the range came the announcement: "The Pal'chikov crew bombed excellently." Hence both competing crews had received the highest marks.

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## BOOK ON U.S., NATO MILITARY REVIEWED

Moscow AVIATSIYA I KOSMONAVTIKA in Russian No 1, 1980 p 11

[Review by L. Chernous'ko of the book "SShA i NATO: Istochniki Voyennoy Ugrozy" (The United States and NATO: Sources of Military Threat) by N. F. Petrov, N. I. Sokolov, I. V. Vladimirov and P. P. Katin, Moscow, Voyenizdat, 1979, 254 pages, price 55 kopecks]

[Text] All the plans and deeds of the bosses of the North Atlantic bloc cause tension in international relations, they undermine the bases of peace and detente, they lead to the intensification of the arms race, and represent a danger for socialism and the revolutionary workers and national-liberation movements. This is convincingly shown in the recently published book [reviewed here]. It unmasks the aggressive nature and discloses the basic directions of the military policy in the capitalist states which are members of the North Atlantic bloc, and provides a description of the armed forces of this bloc. The authors emphasize that by its nature imperialism is a reactionary system which incorporates sources of expansion and aggressive wars. Under present-day conditions, as before, it is wagering on military force, and views the army as a powerful weapon of class dominance and aggressive policy.

Using specific examples the book discloses the anticommunist and anti-Soviet nature of the military-political concepts of the United States, the main motivating force of reaction, and the aggressive NATO bloc, and using factual material, the practical deeds of imperialism are shown which, under the conditions of detente, is endeavoring to implement its plans using military force.

History knows about the bloody campaigns of the Yankees against Cuba, Mexico, Haiti, Colombia, the Dominican Republic, Nicaragua, Panama and Guatemala.... The aggression against the Vietnamese people which ungloriously failed was a great infamy for the United States.

The cover of the book shows a photograph of an American bomber dropping a series of heavy bombs on burning objectives. Such photographs dotted the world press during the U.S. aggressive actions in the countries of Southeast Asia.

The contents of the book are based upon documentary data which disclose the reactionary bent and goals of the military preparations in the states of the aggressive bloc. Here we find many materials on the creation of the nuclear missile and aviation potential of these states.

The main role, the authors stress, in the plans of the American military is played by a triad of the strategic offensive forces: the intercontinental ballistic missiles, the nuclear-powered missile-carrying submarines and strategic bombers. Year in and year out the allocations are created for carrying out long-range development programs for these forces. They are continuing to replace the previous ballistic missiles with the more advanced Minuteman-3. Instead of the Poseidon missiles, the submarines are to carry Trident-1 missiles with a range of about 7,300 km. At the same time, the Trident-2 missile is being developed with a range of 11,200 km and this will be commissioned in 1985.

As for the U.S. Air Force, at present it has, as the book points out, around 9,000 combat aircraft. The Tactical Air Command on the continental United States has up to 1,000 combat aircraft. In Europe, the Americans are keeping the 3d Air Army (in England), the 17th (in the FRG), and the 16th (in Spain). Individual subunits are also stationed in Greece, Italy, the Netherlands and Turkey. Around 800 combat aircraft are in the Air Force National Guard, and around 500 in the reserves. The Air Force supports aeromobile troops, as well as the Rapid Response Corps which was organized after the events in Afghanistan and Iran and is designed by the overseas strategists for operational punitive actions.

In unmasking the policy of the arms race, the authors of the book point out that although the number of "tactical" American nuclear warheads in Western Europe already exceeds 7,000 units, the Pentagon is planning to station here new improved Pershing-2 missiles and medium-range cruise missiles capable of reaching Soviet territory as far as the Volga. By the 30th anniversary of the creation of the NATO bloc, its military machine had grown to improbable size. At present armed forces of up to 5 million men are being kept on the highest technical level. Over 2 million men, around 12,000 tanks, and more than 3,000 combat aircraft are directly under the NATO command in Europe.

The system existing in certain armies for military training and indoctrination of the personnel is aimed at producing obedient robot-soldiers ready to carry out any criminal actions.

In following in the spirit of the anticommunist views of the Pentagon, the propaganda organs are endeavoring to discredit the peace-loving foreign policy of the Soviet Union, to instill hate for the USSR and the other socialist countries among the NATO personnel, and prove the necessity of a further increase in the rate of the arms race.

The materials given in the book disclose the dangerous plans of the Pentagon and the NATO military against peace and detente and against the security of peoples. They urge the Soviet military to increase vigilance and further strengthen combat readiness so that no intrigues by the forces of imperialism and reaction will prevent the peaceful labor of our people.

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## ACTIVITIES, CAREER OF DESIGNER A. S. MOSKALEV DESCRIBED

Moscow AVIATSIYA I KOSMONAVTIKA in Russian No 1, 1980 pp 18-19

[Article by O. Mukhin: "Wings for the Future"]

[Text] Soon after finishing university, Moskalev entered the Leningrad Krasnyy Letchik [Red Pilot] Aviation Plant as an apprentice engineer. At that time, following the plans of the designer D. Grigorovich, the plant was building a series of fighters, the I-2 bis. One of the problems was to develop reliable cooling for the engine. The repeated change in the shape of the radiator had been of little good. The enterprise director V. Zverev proposed that the university graduate make a study. Moskalev assembled data on the testing of various types of radiators, he processed them using mathematical statistics methods, and constructed graphs making it possible to select the most rational cooling system.

Since his first days in aviation, Aleksandr Sergeyevich (Moskalev) had felt the importance of mathematical methods in designing. At the same time he thoroughly studied applied engineering sciences and production methods as well. While on the job, he completed as an external student the Technological Institute imeni Lensoveta. At his home university, as a second job, he gave lectures on aerodynamics and aircraft design and strength.

Gradually Moskalev's resolve to design his own aircraft matured.

And when in 1930, the plant received a competitive announcement for the development of a fighter-interceptor, Aleksandr Sergeyevich energetically took to designing it. As a result the plan of the SAM-1 (Aircraft of Aleksandr Moskalev, First) appeared with an M-34 experimental motor. The design was approved, but the motor was not received for the aircraft. The initiating group existing at the plant headed by Moskalev proposed that a training seaplane the MU-3 be built with an M-11 engine. At the same time, an order was received for designing the 12-seat SAM-3 aircraft with two M-11 motors for operating between Leningrad and Kronshtadt.

The illness of the young designer impeded the realization of these plans. Pulmonary tuberculosis was discovered in him, and physicians insisted that he move from Leningrad to Voronezh. There a giant aviation plant was being built for series production of the Tupolev-designed TB-3.

In preparing the production facilities to produce the TB, Moskalev developed the plans for the SAM-5 aircraft which was approved by Korolev. With a group of

volunteer designers, the brigade heads L. Polukarov, Ye. Sorebryanskiy, M. Shubin and B. D'yakov, Aleksandr Sergeyevich developed the plant's first aircraft. From the very outset, Moskalev endeavored to make the aircraft economic, structurally strong and as light as possible. And he achieved his goals. The all-metal SAM-5 became a turning point in the development of our light-motor aviation.

During those years Duraluminum was a scarce material, and the subsequent aircraft of this type were built from wood. But this did not impede the designer, in using low-power engines, from achieving good cargo-carrying capacity and high performance.

The wooden version of the SAM-5 was named the SAM-5 bis. In its cargo-carrying capacity (more than 45 percent of the flight weight) it stood out among the other aircraft with the M-11 engines. In the ambulance version, the SAM-5 bis was built in series and successfully operated in Central Asia. In the sports-tourist version of the aircraft, on 20 October 1926, under heavy meteorological conditions, the pilot N. Fikson and the flight mechanic A. Buzunov made a nonstop flight along the route Sevastopol'--Rostov--Stalingrad--Astrakhan--Stalingrad--Kazan--Gor'kiy, around 3,200 km long.

The newspaper IZVESTIYA on 26 October wrote about this flight: "The fliers flew under exceptionally difficult conditions for more than 25 hours without landing. They showed exceptional courage.... The aircraft proved excellent."

During the same year, the OKB [Public Design Bureau] of A. S. Moskalev was organized. Here, under the leadership of the chief designer, they soon succeeded in building the SAM-5-2 bis aircraft which brought our nation a series of records. On 23 September 1937, at 0800 hours, the fliers A. Gusakov and V. Glebov took off for a flight from a Moscow airport. The light aircraft with a 100-horsepower motor in 19 hours 59 minutes landed at the Krasnoyarsk Airport. Under difficult geographical and meteorological conditions, a distance of 3,318 km had been covered. This was a new international record. In 1938-1939, with the SAM-5-2 bis, three other international altitude records were set (8,000, 8,400 and 8,900 m) for aircraft of the fourth weight category.

In the 6-seater the SAM-10 (1938), Moskalev achieved an amazing combination of aerodynamic design and efficient weight and surface finishing. This made it possible to obtain almost the maximum performance for light-motor aircraft. Suffice it to say that the speed was 336 km per hour. In a report of the commission of the NII GVF [Scientific Research Institute of the Civil Air Fleet], it was pointed out that none of the known aircraft with engines of similar power possessed such high indicators, while the maximum speed surpassed the optimum expectations.

The close cooperation between the OKB which he headed and Voronezh University helped Moskalev achieve the aerodynamic progressiveness of his aircraft.

As early as 1933, upon instructions of the leader of the Soviet aviation industry, P. Baranov, A. Moskalev began preparations for developing a high-speed fighter. On the basis of thorough research, the study of literature, and the testing of various shapes of plates and wings in a wind tunnel, and studying the tactical missions of fighters, the designer found a completely new solution. In order to make a sharp jump in speed up to 1,000 km per hour, unusual wings were needed. Among the mass of literature on the movement of bodies at enormous speed, Moskalev

was interested in the materials on the firing of shells. The curious mind of the scientist and designer even then saw that the aerodynamic design of a high-speed aircraft should be in the form of a triangular-shaped short flying wing in the plan view with a variable configuration along the leading edge reminiscent of the axial section of the head of an artillery shell. Our nation over 45 years ago became the homeland of the designs of the world's first aircraft which had a design of a triangular slender "flying wing," and was the prototype of modern supersonic aircraft.

Initially Moskalev designed the "Sigma" (SAM-4) aircraft for crossing the sound barrier with a ZhRD [liquid-fuel rocket engine]. He knew about the liquid-fuel rocket engines being developed in Leningrad by V. Glushko. But the ZhRD were at that time only experimental, with low thrust. On the aircraft they decided to mount two piston-driven engines of 760 horsepower and this greatly complicated the design. The coupled engines had to be concealed in the wing, two saber-blade coaxial counter-rotating propellers were mounted on the elongated shaft, and tips on the wing ends had to be used. The pilot was in a semi-lying position. A three-wheel retractable undercarriage with a nose wheel was developed for the aircraft.

This design was in the forefront of aviation science at that time. It significantly surpassed the technical capabilities of the aviation industry. For this reason the design of the experimental aircraft was given a cool reception. Moskalev realized that the idea was unusual and would not go through immediately, but he requested that the plans be left in the archives as a priority claim for the future.

Two years later, when information began to be received that various nations were beginning to show an interest in swept-back slender wings and other technical innovations which had already been incorporated in the design of Moskalev, the designer was immediately summoned to Moscow. He was given the assignment in a short period of time (in 2.5 months) of building a light experimental aircraft, an analog of the "Sigma" fighter.

As Moskalev himself recalled the preliminary design of the analog known as "Strela" [Arrow] was finished in 3 days: "I was given a room, a drafting board, and brought pies and tea. For 3 days and 3 nights I did not leave my desk, and in 70 days the 'Strela' was already built."

Moskalev was helped in the aerodynamics by I. Kochin (who soon thereafter became an academician), V. Gorskiy and the leading strength expert of the TsAGI [Central Aero-Hydrodynamic Institute], V. Belyayev. While "Strela" was being built, Gorskiy was able to test a model of it in the wind tunnels of the TsAGI, and substantiated all the designer's calculations. Belyayev affirmed the strength data.

In 1937, testing commenced on the unusual aircraft in Voronezh. Then the "Strela" was transported to Moscow. In its first flights it behaved strangely and could not get higher than 25 m. As always, there were skeptics. But they were to be disappointed. At first the pilots could not believe that the "Strela" had to climb not at the usual angles of 8-10°, as on the aircraft of those times, but at double that amount.

The "Strela" was successfully tested by the Honored Test Pilot of the USSR, Hero of the Soviet Union, Gen N. Rybko. This was on the eve of the October Holiday. At the airfield, the students of the Air Force Engineering Academy imeni N. Ye. Zhukovskiy

were preparing for the parade. They watched the triangular aircraft with interest. A short run, the take-off, several seconds of level flight, and then the pilot sharply increased the angle of attack (22°). The "Strela" nosed up, and obediently began to climb. At an altitude of 1,500 m, the test pilot confidently began to make turns and steep climbs.

Later Nikolay Stepanovich [Rybko] recalled the flight in this manner: "In those years I had flown more than a score of aircraft, but I always remember the 'Strela' when I see the modern supersonic aircraft. This small aircraft was a distant prototype of the modern supersonic airliners. For the sake of justice, the shape of the triangular slender 'flying wing' should be given the name of its developer, Moskalev."

After the testing of the "Strela" the designer was offered a chance to develop the design of a new type of fighter. But Moskalev reached the completely correct decision that such an aircraft could be made only with jet engines, and as yet these did not exist. The designer returned to the plan for such an aircraft at the end of the war, in 1944.

Incidentally, in 1946, information was received about the German design of the "Jager R-13" a slender-wing fighter. The wind tunnel model of the R-13 was almost a precise copy of the "Strela" and was designed for the use of a jet engine.

But let us return to the 1930's. During the prewar period, Moskalev proposed 35 aircraft designs and built 23 models of experimental and series-produced aircraft. Each of them in the air demonstrated high flying and operational qualities. Such assignments were carried out as the adapting in record time of the ANT-25 (RD) for aviation diesel engines designed by A. Charomskiy, and then the installation of them on the TB-3, or the development of the unique two-seater tailless fighter with a calculated speed of 700 km per hour. Moskalev built amphibious planes and landing-force gliders.

During the years of the Great Patriotic War, Moskalev created a new enterprise in Siberia on the basis of the aviation plants evacuated beyond the Urals and his OKB. Being the director and chief designer of this plant, he prepared a troop series of the world's first jet fighters, the Bi-2, for production, and directed the series production of the aircraft, the landing-force cabins of the DS-2 and the AM-14 gliders for conducting airborne operations and material supply of partisans. It is interesting to note that the AM-14 was the modernized A-7, a 7-seat glider, designed by O. Antonov and reworked by Moskalev as a 16-seater. So many changes were made in the design of the glider, that Antonov himself designated the glider "Antonov-Moskalev" or AM-14.

Among the decorations of the designer is the medal "Partisan of the Great Patriotic War" First Degree. About this Aleksandr Sergeyevich has said: "It was in 1943. In the Minsk triangle, the partisans were in a difficult situation. Well armed punitive troops surrounded them. And in the disposition of the partisans there was also the peaceful population from the surrounding villages including old men, women and children. They had to be immediately supplied with weapons and food. I phoned Stalin and set the mission of manufacturing 50 gliders in a month. We carried out the party's assignment on time. The gliders delivered reinforcements to the partisans. And soon thereafter I received this medal."

The SAM-5-2 bis aircraft of Moskalev participated in the war as liaison and medical aircraft. The light aircraft SAM-25 with 5-6 seats developed in 1943 possessed a great speed and cargo-carrying capacity. The aircraft repeatedly participated in airborne landing flights to the partisans.

In 1944-1945, Aleksandr Sergeyevich, in coming back to the delta wing, using the "Strela" design worked out the plans for the RM-1 combat aircraft with a jet engine designed by L. S. Dushkin, the RD-24-3V with a thrust of 2,000 kg and which had been specially designed since 1945 for this aircraft. However, in 1945, for reasons which did not depend upon the designer, this work was halted.

When S. P. Korolev began to develop powerful missiles, he remembered Moskalev. In 1948, Moskalev received a telegram from Sergey Pavlovich [Korolev] with a proposal to take the position of his first deputy. But by this time Aleksandr Sergeyevich had already moved into teaching work.

By the beginning of the 1950's, the Soviet aviation industry was confronted with the important problem of developing supersonic aviation. Moskalev was instructed to set up a special-problem laboratory for conducting comprehensive research. He was one of the first to use a comprehensive method for forecast designing. As a result of the research, for the future supersonic aircraft, design and layout solutions were obtained and these were backed up by wind-tunnel models. For achieving high performance of the supersonic aircraft, new aerodynamic components had to be developed similar to the ones that had been used back in the 1930's in designing the "Sigma" and "Strela" aircraft. This was brilliantly substantiated by the development of modern long-range supersonic aviation.

The research carried out under the leadership of Moskalev made a significant contribution to strengthening the defense capability of our country. Regardless of his 75 years, Aleksandr Sergeyevich continues to work in the collective which he organized. Each day in the area of the Komendantskiy Airfield of Leningrad, where more than 50 years ago the designer and scientist started his creative path and where now his home is located, one can see a tall man walking toward the laboratory. His thoughts are preoccupied by hypersonic aircraft, the wings for the future.

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## EFFICIENT REPAIR METHODS FOR AIRCRAFT EQUIPMENT REVIEWED

Moscow AVIATSIYA I KOSMONAVTIKA in Russian No 1, 1980 pp 30-31

[Article by Engr-Capt N. Roslik: "Input Control"]

[Text] The repairs had been completed on the fighter. The squadron specialists carefully inspected and tested the equipment, systems and controls. There were no remarks. A test flight substantiated that the preventive operations had been carried out with high quality.

In honor of the 110th birthday of V. I. Lenin and the 35th anniversary of the victory over Nazi Germany, the specialists from the subunit are constantly achieving an improvement in equipment operations. They performed more than the planned number of 100- and 200-hour repairs. As a result there has been a significant increase in the operating time of the aviation equipment between repairs. Combat readiness has risen.

Several times the personnel has passed a difficult examination with the repair and rebuilding work done under field conditions. And here all the technicians and mechanics showed that they were able to carry out the operations in their own basic and related specialties within shortened times. Moreover, during the period of the tactical flight exercises, the leaders of the socialist competition, Officers V. Voronin, P. Savinich and others, helped the specialists in other squadrons in readying the equipment and servicing the flights.

For 4 years, the collective of the TECh [maintenance unit] has held the title of outstanding. And this is largely due to the leadership of the subunit, the chiefs of the groups who constantly improve the organization of labor. They give great significance to the range of organizational-technical measures aimed at increasing combat readiness and operational reliability of the aircraft fleet.

Recently we introduced so-called input control. For example, upon receiving the next aircraft at the TECh, we test the engine under all conditions. During the test of the power unit in operation, all the necessary parameters are monitored. During this period, flaws can be detected which, possibly, were not suspected in the squadron. It has happened that in turning over the aircraft to the squadron, malfunctions were suddenly discovered, and precisely where, according to the flow chart, the TECh specialists were not to carry out operations. Because of this there have been instances of the forced stoppages of the aircraft and delays in returning them to the squadrons.

Input control prevents such surprises. Moreover, the groups draw up comparative descriptions of the initial and output parameters of the aircraft. The specialists without fail use the data of the instrument monitoring for the last flight shift, and this makes it possible to better prevent failures.

The chief of the TECh, Engr-Maj V. Paliychuk, and the other leader-specialists, in maintaining constant contact with the deputy squadron commanders for IAS [Aviation Engineer Service] and with the engineering department, know when equipment will begin to be received most intensely for repairs, and in particular, for labor-intensive jobs. They plan ahead of time to prepare for this responsible period.

In particular, schedules are drawn up and discussed for two-shift work of the personnel. Due to them, the time available for servicing the aircraft is increased by 1.5-fold without changing the length of the working day of the specialists. In truth, certain difficulties are created for the group chiefs in manning the shift. Experience has shown that they should be equally balanced in terms of the number of foremen and high-class executors, as well as mechanics who have mastered related professions. Only under this condition is the personnel of the first shift capable of fully carrying out all the planned operations and passing over the work to the second on time.

It does happen that a mechanic for one reason or another is unable to complete an operation. In knowing this, the group chief immediately assigns a specialist for working on the first shift the following day. All of this forces the leader-officers to constantly keep a finger on the production pulse, but the additional time spent is fully repaid by the good economic effect. With the most intensive delivery of aircraft at the TECh, the production pace is precisely maintained, and all rush work, mistakes and redoing related to hurry are fully excluded.

Creative search is inherent to a scientific organization of labor. Capt Tech Serv V. Danchenko, Yu. Odnostorontsev and B. Galuga, Sr Lt Tech Serv N. Katkov, Lt Tech Serv A. Korobkin, WO ["praporshchik"] V. Chernysh and other innovators devote a great deal of energy to creating additional equipment needed for performing the adjustments under flight conditions, as well as adaptations for work under stationary conditions. The rational placement of instruments, tools and other equipment has made it possible to achieve maximum compactness of the carts on which are found all that is needed for the work, for example, of electricians, radiomen and other specialists. Now they inspect the systems, units and instruments without removing certain units from the aircraft. We also have special carts for the additional taking of the most crucial parameters.

The innovators in the subunit systematically replace the training facilities in the classrooms and labs. We have improved the stands for testing aviation and radio-electronic equipment. The group chiefs pay particular attention to improving the working conditions of their subordinates. In each laboratory there are boards, operating stands and accessories which make it possible to test various units simultaneously. The tool boxes, materials to be used and instruments are conveniently positioned. A technician does not need to go repeatedly to the tool room and back. And the visual format of the technical specifications and excerpts from the instructions help the young specialists recall the sequence of one or another operation and the safety measures.

We used to lose a great deal of time in laying out the lines of the automatic controls (SAK). In a certain sequence we had to unroll numerous hoses and electric braided cables. If a mechanic was in a hurry and was not careful, the lines became tangled. Officers B. Galuga and P. Savinich worked out and introduced a method for laying the lines in a movable trough. For putting them in a working position, it was merely necessary to turn the movable rod like the one used on an APA [airfield jet engine starter]. The time of the operation was shortened by almost 3-fold. Moreover, one specialist was freed.

The central controlling of production processes plays a special role in the organization of NOT [Scientific Organization of Labor]. The controller V. Korotkov, a very experienced specialist, knows in detail the possible bottlenecks, and directs the work in such a manner that the mechanics from the various groups do not gather up around the cockpit or the forward or rear compartments. The executor, having completed an operation, immediately reports to the controller. And he, having organized inspection, immediately redirects the technician or mechanic to the next operation. The controller watches carefully over the adherence to the schedule and establishes beforehand the reason if a delay has occurred. V. Korotkov informs the corresponding group chief or the TECh chief, and they take measures to eliminate the interruption.

At the end of each week, the controller in technical analyses analyzes who has been to blame for the most delays, and why they have arisen. And the leader-officers plan additional studies and training of the specialists, and they discuss other measures aimed at improving work efficiency.

We receive various procedural aids, including those on carrying out repairs. We carefully study them and use them in practice. The decisions and recommendations which sometimes are of a general nature are concretized, proceeding from the specific features of our work and the particular features of the training period.

In the socialist competition to improve the quality of work and to further introduce NOT, at present the group ahead is the one led by Capt Tech Serv V. Danchenko. A master of military skills, communist Danchenko skillfully plans the work of the specialists and rationally allocates the inspection and adjustment equipment. Each executor is given shift assignments. Regardless of the fact that in his group WOs ["praporshchik"] S. Babich and A. Shulyak have the skill of master while WOs A. Boldyrev and K. Panyutich are first-class specialists, the officer makes no concession for them. From time to time he holds brief talks with them, checking how they know the design and technical operating rules. The group chief systematically organizes an exchange of opinions on the rational execution of the most labor-intensive jobs. Officer Danchenko not only is demanding on his subordinates, but is also sensitive to them, and is concerned that they all do not fall behind in their professional growth but rather constantly improve their skills.

The party activists headed by Officer V. Salin have generalized the experience of this group, and it is being successfully introduced by other collectives. This makes it possible to achieve a better quality in repairs, and make effective use of NOT in carrying out all the tasks confronting our subunit.

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## SEARCH BY MAINTENANCE UNIT FOR EFFICIENT REPAIRS DESCRIBED

Moscow AVIATSIYA I KOSMONAVTIKA in Russian No 1, 1980 pp 30-31

[Article by Engr-Maj V. Voloshanovskiy: "In the Search for the Best Methods"]

[Text] The first month of winter combat training is over. For the personnel of our unit, it has been the next step in the socialist competition started in honor of the 110th birthday of V. I. Lenin and the 35th anniversary of the victory over Nazi Germany.

The work of improving the methods of conducting all types of exercises and training sessions holds an important place in carrying out the increased obligations and improving the quality of the training process and indoctrinating the aviators. We give special attention to the technical analyses as the most effective form of training which has a direct impact on the quality and effectiveness of operating military equipment. The achieving of high efficiency in the work of the technical personnel and constant training from the example of the best specialists have become the chief area of the procedural search.

This is why we have made the comparison of the results achieved in the crews as the basic element in the technical analysis. The leader of the analysis without fail begins it with a description of the tasks carried out by the personnel and the indicators achieved. Using facts and figures, the engineer demonstrates how the best and the laggards worked, what innovations have been used by the specialists and what was the effect from them.

Once the regimental aircraft and engine engineer, Officer R. Shcherbatsevich in the analysis noted the success of the personnel in one of the squadrons. This sub-unit's deputy commander for IAS (aviation engineer service), Maj Tech Serv A. Trushinskiy, the group chiefs and the heads of the flight TECh (maintenance unit), in giving assignments for the forthcoming day, saw to it that each executor understood it clearly and had a clear notion of his own role in the work of the complicated airfield conveyor. The leader officers using the sampling method made certain that the subordinates knew certain technological operations as well as observed the safety measures. Particular attention was paid to their ability and skill in coming to the aid of the person most needing it.

In particular when it was necessary to change a failed unit on the fighter assigned to Officer I. Stolyarov, the technician was immediately allocated mechanics from those aircraft where there was least work. The aircraft was returned to the line on time.

In the analysis a comment was made of the positive role of the work methods using the data of the onboard monitoring devices. In this squadron, they are quickly given to each specialist. The tape of the KZA [Audio Monitoring Device] is studied immediately after the flights, and the results are considered in assessing the actions of the IAS men.

Naturally, after such a specific demonstration, the experience of the leading squadron was made available to all the subunits.

Officers R. Bikchurin, A. Ufimskiy, N. Skvernyuk and V. Ipolitov conduct the analyses in a pedagogically effective manner. They are greatly aided by their knowledge of engineering psychology human factors and military pedagogics. Thus, having studied the actions of the personnel during training sessions, these engineers in the analyses raise the question that certain elements in the training sessions, were conducted in the old manner and were not visually striking. Hence they were little effective. After a discussion with experienced specialists from the operations groups and with technicians from the repair groups, the engineers propose that the rationalizers make trainers which would conform to the modern requirements of industrial design. As a result of introducing the new proposals, now the aircraft "cockpit" is connected with the weapons controls and with the working stands of the weapons systems. This makes it possible to develop the skills of handling the sight and weapons in different variations. And it is also possible to observe the physical processes which occur in the systems, and in activating individual automatic safeties, switches and buttons. The places have been marked where misadjustments or breakdowns in the equipment can appear.

The trainers have been gradually transformed. The aviators study in them with increasing return.

Moreover, for increasing an interest in the trainers for suspending and changing the types of weapons, Engr-Maj Bikchurin has organized unique contests between the pilots and technicians. Undoubtedly, this encourages the personnel to more thoroughly study the design and methods for operating the aircraft weapons.

The regimental IAS leaders constantly demand from the subunit engineers a profound analysis of even the slightest errors in the actions of the personnel in order to exclude their repetition. They check how the logs are kept for preparing the aircraft for the flights, and also the logs of the repair groups chiefs. What entries have been made and how they responded in the subunits to the remarks of the pilots. This question is also taken up in the analyses.

Some of our engineers still do not possess sufficient pedagogical skill. And although the observations of these officers are correct and the conclusions are right, the insufficient pedagogical skill and the inability to well organize and direct the developing technical debate in the necessary direction do not allow them to make the analyses memorable and instructive.

In our regiment it has become a rule to exchange the experience of the leaders of the technical analyses. At such exercises the officers supervise each other and propose methods for eliminating shortcomings. Here is one example.

Engr-Maj Shcherbatsevich was known in the unit as an erudite, intelligent specialist who had repeatedly found original solutions with the occurrence of failings on the aviation equipment, and was respected in the unit. However it was noticed that in conducting the analyses he was short tempered and at times unjustifiably criticized the IAS specialists. And the men were not always frank and fell silent when the engineer-major endeavored to organize an exchange of opinions on one or another question of aircraft operations. This undoubtedly had a negative affect upon the quality of the analyses.

We explained to the officer that it was essential to be more attentive and restrained in judging the opinions of subordinates, and most importantly to be objective. Certainly, we did not limit ourselves to just advice. Before the exercises and analyses, together we drew up a plan for them and outlined the subjects for discussion. Gradually the engineer-major successfully developed a method for conducting the analyses and acquired the skill of organizing a lively, creative discussion.

Or take another of our engineers, Sr Lt A. Dolgov. He was also a skilled specialist and had completed the VUZ with a gold medal. But initially in the analyses he was unduly timid and weak. And how could he bring the audience alive if he himself was dead! We also had to work a great deal with him, in aiding him in acquiring confidence, and taught him in a well-reasoned instructive manner to conduct the analyses and exercises for technical training.

The search started by us for the best methods undoubtedly will help in subsequent months of the training year to raise the level of the training process in the interests of increasing the reliability of the equipment and flight safety.

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## GREATER EMPHASIS ON PILOT NAVIGATION TRAINING URGED

Moscow AVIATSIYA I KOSMONAVTIKA in Russian No 1, 1980 pp 42-43

[Article by Capt Yu. Andronov: "A Chart Is Not For Show"]

[Text] The preliminary preparations for the flights were coming to an end. The pilots again checked the calculations and inspected the complete preparation of the flight charts. Sr Lt V. Mironenko was transferring data from the finished chart to the knee pad. To his comrade's question of the reason for such a transfer, he replied:

"We have a permanent route to the range, and why wear out the map? We must keep it fresh for the next inspection."

Having completed the preparations, Mironenko went to the commander for a readiness check.

On the next day the regiment learned that V. Mironenko did not carry out the mission, he was unable to reach the range, he had temporarily lost his way and returned to the area of the home airfield only with radar aid. In the analysis it turned out that the pilot left the chart prepared the evening before on the ground. This instance was a lesson for Mironenko, and even now, having become a high-class specialist, he remembers it.

Each year modern combat aircraft and their navigation systems are being improved. In this regard, the demands are also growing upon the precision and reliability of navigation. In carrying out a flight mission following the commands from the control tower or using an automated control system, a pilot should constantly monitor the location of the aircraft. Instances are known when experienced pilots who have neglected this demand have fallen into a difficult situation due to a partial loss of orientation.

Somewhere in the course of a tactical flight exercise, Sr Lt A. Chikunov, after the executed interception and dogfight with the "enemy," during the day under visual flight conditions upon a command from the control tower, set the course back to the airfield at which he was to land according to the flight mission. In approaching the airfield, the pilot established contact with the controller, received the necessary data for the landing, and reported that he could see the airfield and the navigation instruments were working reliably. But in fact he had mistaken the neighboring airfield for his destination. And only intervention from the control tower helped Chikunov.

Here is another example. In preliminary preparations, the pilots were working out the flights for an interception and studied the characteristic errors. When it got around to discussing the route, the officer who was to fly as the target, stated:

"I have flown this route several-score times. I could follow it with my eyes closed. There is nothing more to say. That is now it is in the long-range aviation!"

The daytime flights started. The interceptors were lining up to take off. A large cumulus cloud appeared at this time on the route. The controller gave the command to the pilot acting as the target:

"140, to the right 20, cloud ahead."

"Roger," he replied.

In going around the cloud, the pilot was instructed to go to the second turning point. Having executed the maneuver for correcting the line of flight, he set the new course and arrived...40 km to the right of the turning point of the route.

At first glance it seems improbable that an experienced pilot in the daytime under visual flight conditions over terrain with characteristic markers and in addition with the reliable operation of the navigation instruments was unable to reach the landing airfield or that a pilot who had flown the route several-score times could get off course. Why did this happen? Who was to blame? The basic share of the blame rests, of course, on the pilots themselves. They were poorly prepared for the flights. But the blame is also not totally off the commanders who inspected their preparations. The inspections were superficial and formal.

The same thing was repeated with the pilot G. Shalayev. Under instrument flying conditions, he was to reach the range, locate the target and destroy it. Previously in carrying out analogous missions he had made errors, but the last time he had flown dependably, and the flight commander had reported to the senior chief that the pilot was fully prepared for the flight.

Before getting into the cockpit, Shalayev glanced at the bombs under the wings and winking at the equipment and the comrades standing nearby, he dropped confidently: "They will hit!"

The aircraft soon returned to the airfield. The pilots were glowing as they had carried out the mission. Only Shalayev left the fighter cockpit scowling. He had not reached the range.

What was the problem? It turned out that Shalayev was flying without a chart, although in the preflight preparations he had one. It later was discovered that the pilot had "forgotten" it at the staff, and had made only certain notations on his knee pad.

"I had learned the route by heart," said the officer in the flight analysis. "I never use a chart in a flight."

It turned out that Shalayev was flying without a chart and none of the commanders knew this. Moreover, in the exercises, particularly during the flight preparatory

period, he was distracted and engaged in outside affairs, and this told negatively on the quality of the exercises executed in the air. And the commanders and his comrades were unable to promptly check him or put him in his place. Impunity for the violation of flight laws, a negligent attitude toward preparations, and incomplete training without thinking through his actions in the stages of the flight led to a situation where Shalayev did not carry out the mission.

All that happened to Officer Shalayev is not merely a consequence of his lack of conscientiousness. It is also the result of the failure of the commanders and senior chiefs. The indoctrinal work with the pilot most often came down to a reprimand, while the unjustified transfer from one flight to another led to a frequent changing of instructors. This is bad from the viewpoint of flight training procedures. They did not find the necessary approach to the pilot.

A firm knowledge of the area of the flights, a detailed orientation on any leg of the route, and initiative in selecting the optimum conditions always contribute to the successful fulfillment of the mission.

For example, this is what Lt Col G. Baranovskiy did upon receiving the mission for the squadron to attack the "enemy." At the designated time the aircraft were in the air. The conditions were difficult, and the lower edge of the clouds along the route did not exceed 300 m. Baranovskiy gave the order for them to close in and having checked the battle formations of the group, continued the flight. Soon breaks in the clouds began to appear. Finding the suitable "opening," the leader led the group into the clouds and this complicated orientation. When they were approaching the target, the cloudiness was breaking up, and Baranovskiy could not immediately establish the exact location. A detailed study of the area of the pending operations helped. Having spotted brush along the edge of a ravine, the group commander immediately located the position of the target. It was to the right one minute's flight away. Having reported his place and the time of reaching the target to the leader of the exercises, the pilot rapidly got his bearings, discovered the "frontline," and accurately led the squadron into the target area. The strike was precise, dynamic and instantaneous.

As is known, navigation training for flight personnel is one of the chief elements in combat training. In the units it is organized and carried out considering the achieved level of pilot skills by the senior navigator.

At one time prior to a flight to the range, one of the pilots voiced the opinion that there would be a good thing to set up a homing beacon. Why complicate an already difficult mission and abandon the use of the possibilities found in modern equipment. Of course it would be much easier to reach the target with a guide. But in real combat a significant portion of the aircraft navigation and flight control equipment can be jammed. Moreover, a flight to a target, for instance, at low or maximum-low altitudes and at high speed greatly impedes the carrying out of orientation, and here piloting techniques are complicated and the possibility is excluded of using a flight chart. Under such conditions, the independent search for ground targets can be the basic method. Consequently, conducting detailed visual orientation, and the ability to reach the given target without the aid of radio-electronic navigation gear and to make an accurate strike are assuming ever-greater significance. Only a pilot who has firm skills in exercising the entire navigation complex without using the radioelectronic equipment is capable of carrying out the

combat mission. And these skills are acquired in daily flights and in the careful preparations for them. An excellent knowledge of the flight area and the characteristic markers, a navigator's eye and speed of calculation--this is what leads to success.

As the skills of an air fighter grow, he is given ever-more complicated missions. And his responsibility for carrying them out also rises. But it would be wrong to feel that a flight, let us say, along a circular route could be carried out as a joke, without special effort. In the air one has merely to allow oneself even a momentary distraction or weaken visual or radio vigilance and the situation can instantly become complicated. It is no accident that deviations from the route and unsuccessful landing approaches occur precisely under visual flying conditions, when the feeling of responsibility involuntarily is lowered. And the "pristine" map presented to the commander for inspection long since did not fully reflect the readiness of the pilot to carry out the mission. An increase in the exactingness upon the professional training of the aviators generally and upon navigation training in particular is one of the most important tasks of the commanders.

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## PERFORMANCE, TACTICS OF U.S. F-111 FIGHTER-BOMBER DESCRIBED

Moscow AVIATSIYA I KOSMONAVTIKA in Russian No 1, 1980 pp 46-47

[Article by Col R. Klyuyev: "Combat Aircraft of the Capitalist Countries: The F-111 and Its Modifications"]

[Text] At present, the grouping of the Joint Air Forces of the Joint NATO Bloc in Europe includes air wings of the F-111 fighter bombers of the U.S. Air Force. Stationed at Upper-Hayford Air Base in Great Britain is the 20th Air Wing (F-111E), and at Laconheath Air Base the 48th (F-111A). There is a total of 158 aircraft.

The F-111A fighter bomber was used in combat during the aggressive U.S. war in Vietnam. Each of these aircraft had a normal take-off weight of 33 tons, and could carry a bombload of 11,000 kg. Two tubrofan engines with a thrust of 19 tons under afterburner conditions provided an accelerated take-off and a maximum speed corresponding to the Mach number of 2.5 at a high altitude and Mach 1.2 at a low one. The pilot and the operator were seated side by side in an ejectable (as a whole unit) cockpit. The developers of the aircraft assumed that its flight performance could be increased by using two technical innovations--an automatic system of terrain following and variable configuration wings.

The terrain following system included two radars with a forward directed beam and a vertical and horizontal scanning narrow beam. The signals on the distance to an obstacle were received by an automatic pilot which controlled the aircraft for bank and pitch without the pilot's interference. A flight at an altitude of 60 m, the specialists assumed, should provide a radar screen and successful penetration of air defenses.

The variable swing of the wing in taking off and landing (sweep angles of 16 and 26° respectively) reduced the length of the take-off and landing run to 900 m. With a maximum sweep angle (72°) it was possible to make a "supersonic dash" along the ground over a distance of 385 km. In intermediate positions, this wing provided a rapid take-off run, and increased loitering time in a zone an optimum fuel consumption in flying along a route considering the altitude and bombload.

The equipment of the F-111A included a comprehensive electronic navigation and weapons control system with a digital computer, the memory of which stored the co-ordinates for the turning points and the target. After the "locking on" of the target by the automatic tracking radar, the pilot was free to select the maneuver. On the bombing run the bombs were dropped upon the command of the digital computer.

The tactics of the F-111A fighter bombers were also determined considering the capabilities of the equipment and electronics. These included individual bomb strikes under instrument flying conditions and at night against invisible targets located far beyond the front line. However the complexity of the combat missions were immediately felt in the results of executing them. Thus, on the third day after entering combat operations, the first of six F-111A did not return to the base, and 2 days later a second one.

The composition of the group was restored. But soon thereafter, the air defense weapons shot down a third aircraft. Then combat sorties were halted, and all the F-111A were returned for modification. As a total during the month, 55 individual strikes were made against objectives in North Vietnam. And the "supersonic dash" was not made either at a low or high altitude.

The combining of the two tactical elements: high speed and terrain following in a single flight--was unrealistic. Moreover, under afterburner conditions close to ground, fuel consumption rose sharply, and in flying at an altitude of 90-150 m the pilots had little confidence in the automatic following system and preferred to pilot the airplane manually in dangerous areas. This inevitably led to an increase in flight altitude, and consequently, also to detection by the radar systems of the antiaircraft complexes. It was impossible to break through to heavily defended objectives without losses in the new fighter bombers.

The F-111A aircraft consisting of two squadrons (48 aircraft) reappeared in Vietnam only 4 years later (in the autumn of 1972). During this time the navigation, sight and emergency systems had been modified, and the flight personnel had received the necessary training in low altitude flights at near-sonic speed.

During the second stage of involvement in the air aggression in Vietnam, the F-111A carried out altogether around 4,000 aircraft sorties and here lost 6 planes. In accord with the American "scorched earth tactics" a total of 7,400 bombs were dropped on objectives in North Vietnam. Long-distance raids were made at a maximum low altitude with terrain following under automatic control conditions. Selected stationary targets were attacked.

Particular attention was paid to nighttime attacks against the North Vietnam fighter airfields prior to raids by the B-52 strategic bombers on the areas of Hanoi and Haiphong. Bombs were dropped on the runways in order to prevent the interceptor sorties. But, as experience showed, using conventional bombs a single F-111A aircraft could not cause great harm to an airfield.

Invulnerability was to be achieved by screening against the background of the earth's surface and by achieving surprise. In this regard, individual raids were not provided with fighter cover and were not monitored by the control posts, since radar tracking of a low-flying aircraft over a long distance was excluded. Aside from all else, radio communication with the crews was difficult. Thus, autonomous flight also had serious shortcomings.

The E and F versions of the F-111 had improved electronic equipment and electronic countermeasures gear, as well as a 25-percent greater engine thrust.

In the troop exercises of the NATO bloc, the F-111 fighter bombers, in addition to fire support for the troops under visual flying conditions, also carried out new missions: they attacked mobile armored targets such as tank columns in bad weather, when the operations of assault planes were difficult. Thus, sorties for the immediate purpose of isolating an area of combat operations were supplemented by participation in air support. Before this, the flight personnel was trained at one of the West German ranges.

The crews of the F-111E aircraft also operated against surface targets such as naval vessels to which they were guided by a leader F-4 phantom which eliminated the target with a laser beam. The attack was organized according to the "star" principle: two or three aircraft in a low-level point reached a split line and then simultaneously attacked from different directions. They also simulated the launching of air-to-ship missiles with laser homing heads. Prior to this, the leader neutralized the air defenses using Shrike ramjet engine missiles.

As a total the U.S. Air Force purchased 540 F-111 aircraft of the various modifications. At present, the U.S. Strategic Aviation is armed with four squadrons (66 aircraft) of medium FB-111A bombers which are based on the [U.S.] continent. The FB-111A was developed on the basis of the F-111A fighter bomber, but differs from it in the greater take-off weight, a wing span that is 2.1 m wider, and more powerful engines with a thrust of 11,350 kg each under afterburner conditions, as well as the weapons and composition of electronic equipment. The operating range is 3,000 km with four Sram missiles. This same indicator for the F-111E aircraft with a payload of 7,260 kg equaled 2,415 km.

The tactics worked out for the FB-111A differs little from those used by the F-111A fighter bombers in Vietnam. This includes individual raids at low altitude with terrain following to stationary objectives located at great depth. And the difference in attacking is determined by the new weapons, the Sram (AGM-69A) guided missile. It is equipped with a warhead the power of which is comparable with the charge of a Minuteman-3 intercontinental ballistic missile. The basic purpose of the Sram missile is to attack air defense weapons for supporting a breakthrough to the designated target by a bomber strike group. The launch weight of the missile is around 1,000 kg, the length is 4.2 m, the diameter 0.44 m, and the range in a high altitude flight is 280-300 km, and at low altitude 55-60 km. It uses a solid-fuel double-firing engine and a jam-proof inertial guidance system.

The missile is launched from the edge of the permissible range and flies along one of three programmed trajectories: ballistic (maximum altitude of 3,000 m), semi-ballistic and ground-level (with terrain following). The target coordinates are fed into the on-board digital computer ahead of time along with the point for beginning the range count. The digital computer continuously generates the current coordinates of the aircraft. At the moment of reaching the launch line, on the weapon control panel a warning display goes on: "safe, in the firing range." Under automatic conditions, the missile leaves the guides independently. After launching, the inertial guidance unit generates misalignment commands which are sent to the missile controls.

For attacking the same target from different directions, there can also be the sequential launching of several missiles, that is, there is provision to execute anti-aircraft maneuvers under the condition of first feeding the necessary initial data

into the digital computer. The guidance system provides for the immediate turning of the aircraft to the return course after launching. The crew during the flight can feed into the digital computer the coordinates of the detected target and the required warhead detonation altitude. The foreign military specialists from the testing data have commented on the low reliability of the missiles as a large number of failures was recorded.

According to a statement in the journal AIR FORCE, the U.S. Air Force has already purchased more than 1,000 Sram missiles totaling about a billion dollars. This indicates that military preparations are underway intensively in the United States. The entire NATO bloc is gripped by militaristic activity. The arms race in the Western countries is being forced under the unseemly and patently false pretext of a "Soviet military threat."

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## AIR FORCE MARSHAL REVIEWS COMPONENTS OF MILITARY PREPAREDNESS

Moscow AVIATSIYA I KOSMONAVTIKA in Russian No 2, 1980 pp 1-3

[Article by Mar Avn A. Yefimov, twice Hero of the Soviet Union and Honored Military Pilot of the USSR: "Protecting the Great Creation"]

[Text] Our nation is celebrating Soviet Army and Navy Day in a holiday mood. In a flourishing of forces, it has entered the fifth year of the Tenth Five-Year Plan. With new achievements in carrying out the historic decisions of the 25th CPSU Congress, the Soviet people are moving toward the 110th birthday of V. I. Lenin. The spring of this year marks the 35th anniversary from the day of our great victory over fascism.

V. I. Lenin said that any revolution will be worth something only when it is able to protect itself. Born out of Great October and with the duty of protecting the revolutionary victories of the workers and their peaceful creative labor, our Armed Forces have grown up and matured in the gunsmoke of fierce battles against the enemies of the motherland. They have honorably carried their colors through the fire of the Civil and Great Patriotic wars. By their unstinting service of the bright ideals of communism, the Soviet Army and Navy have won the ardent love and gratitude of the peoples in our nation and the workers of all the countries of the world.

Our aims are clear and noble. They were written on the crimson banner of the Soviet nation by Great October. They are peace and the happiness of working people. Over a historically short period of time, our state has traveled a distance equal to centuries.

"We have created a new society, a society the likes of which mankind has never known," said L. I. Brezhnev at the 25th CPSU Congress. "This is a crisis-free society, one of a constantly growing economy, mature socialist relations and true freedom. It is a society where a scientific materialistic ideology prevails. It is a society of firm confidence in the future and bright communist prospects. Open to us are the limitless expanses of further all-round progress."

In being concerned for the good of the people and for increasing the economic and defense might of the motherland, the party and its Leninist Central Committee have set new major measures aimed at the further development of the material and technical base of communism. It is a question primarily of increasing the capacity of the fuel and energy complex and improving its structure. The emphasis is to be put

on increasing fuel output and developing nuclear and hydroelectric power. There are plans to substantially increase the technical level of production in ferrous and nonferrous metallurgy, and increase the output of chemical products. Machine building will develop at an even higher rate. These key problems will be reflected in the plans of the 11th Five-Year Plan.

The decree of the November (1979) Plenum of the CPSU Central Committee emphasized the necessity of ensuring the further dynamic and proportional development of social production, and the consistent implementation of the policy of raising the efficiency and quality of work in all units of the national economy. Particular attention should be focused on the growth of labor productivity and accelerating the intensification of production on the basis of scientific and technical progress, as well as improving economic planning and management.

In carrying out the tasks of communist construction, the CPSU is doing everything possible to ensure conditions for peaceful construction in our nation and the fraternal socialist countries, and for the peace and security of all peoples. Real successes in the policy of detente have been achieved by the joint efforts of the countries in the socialist commonwealth. The new Soviet peace initiatives proposed by L. I. Brezhnev in Berlin have become an important contribution to the reinforcing of positive changes on the international scene.

However, aggressive, imperialist forces continue to act in the world. They are waging on increasing the arms race, undermining detente, and deploying new American nuclear missile weapons in Western Europe.

The Soviet people are vigilantly following the aggressive intrigues of the reactionary forces of imperialism. The policy of detente and a readiness to deal a decisive rebuff to the aggressor, no matter where he might appear, are fused together in the policy of the CPSU. This is its fundamental line affirmed by the 25th Congress and reflected in the USSR Constitution.

Under the leadership of the Communist Party, due to the unstinting labor of the Soviet people, our Armed Forces in their military advancement in recent years have risen to a qualitatively new, higher level. The basis of the nation's defense might is a well-developed economy with a high production and scientific-technical potential. At present all the services and branches of troops are equipped with modern weapons and military equipment. Work is being done constantly to raise the reliability and effectiveness of control over the army, air force and navy forces. Military theory is being developed in accord with Soviet military doctrine.

Article 31 of the USSR Constitution states that the duty of the USSR Armed Forces to the people is to reliably defend the socialist fatherland, and to be in constant combat readiness guaranteeing an immediate rebuff to any aggressor. This obliges the Soviet military to constantly raise their political vigilance and combat readiness, and to always remember their ever-increasing role as a powerful force restraining the aggressive drives of the most reactionary circles in the imperialist powers.

Constant and high combat readiness is a fusion of the technical equipping of the troops, their special military skills, moral-political and psychological conditioning, organization and discipline, and the readiness of each Soviet soldier to carry out a feat for the sake of the motherland. In carrying out these demands, the

commanders, staffs and political bodies are focusing main attention on the full mastery of the military equipment and weapons by the personnel, the maintaining of them in constant readiness, seeking out effective ways for combat application, the further strengthening of creative military discipline, and the constant development of an active vital stance in all the military personnel.

The personnel of the Red Banner Bomber Regiment under the command of Col G. Treznyuk has achieved high indicators in military and political training. For 15 years, there have been no flight accidents here. Last year the regiment fully carried out the assumed socialist obligations and won the title of outstanding.

The military aviators are not standing still. In steadfastly carrying out the decisions of the 25th CPSU Congress and the demands of the USSR Minister of Defense on further increasing combat readiness and improving the quality indicators in training and service, they are endeavoring by worthy deeds to celebrate the 110th birthday of V. I. Lenin and the 35th anniversary of the victory of the Soviet people in the Great Patriotic War.

The personnel of the regiment has appealed to all the men in the aviation of the USSR Armed Forces with a challenge to develop a socialist competition under the motto "Sacredly Carry Out Lenin's Legacy, Improve Military and Political Training, Increase Vigilance, and Always Be Ready to Defend the Motherland and the Great Victories of Socialism."

During the new training year, the military aviators, in carrying out the assumed obligations, are steadily increasing ideological conditioning, and they are continuing a further deeper study of Lenin's ideological and theoretical heritage, the heroic history of the CPSU, the decisions of the 25th Party Congress and the subsequent plenums of the CPSU Central Committee, the USSR Constitution, the works and statements by the General Secretary of the CPSU Central Committee and Chairman of the Presidium of the USSR Supreme Soviet, Comrade L. I. Brezhnev, and his instructions on the defense of the socialist fatherland.

In carrying out the Decree of the CPSU Central Committee "On Further Improving Ideological and Political Indoctrination Work," the party organizations of the aviation units and subunits are focusing attention on instilling in the personnel total loyalty to the party's cause and to communist ideals, love for the socialist fatherland, proletarian internationalism, class hate for imperialism and its supporters, and the developing in the men of high moral-political and military qualities and the capacity to be victorious over the enemy under any conditions of modern combat.

From the very first days of the new training year, the commanders, the staffs and the political bodies have focused the basic efforts in the competition on further raising vigilance and combat readiness, on the excellent mastery of the aviation equipment and weapons, and on assimilating the most effective methods for their combat application. In the units and subunits great attention is given to increasing the indoctrinal role of the competition and to strengthening its impact on the development of the sociopolitical and professional activeness of the military aviators and the strict observance by them of the requirements of military discipline, the regulations, and the standards of communist morality. Success is achieved where they steadfastly and ably carry out the Leninist principles of organizing the competition, where the leadership of it is marked by concreteness and

professionalism and by an exacting assessment of the achieved results. In their practical activities of directing the competition, the commanders, staffs and political bodies carry out the instructions of Comrade L. I. Brezhnev that we do not need a fuss or idle talk about the competition, but rather there must be a vital interest on the part of each person in improving his work.

In the interests of communist indoctrination and shaping strong military characters, it is essential in every way possible to develop and support the enormous and quite natural gravitation of the young soldiers and the recent graduates of military schools to the vivid heroic pages of Soviet history and to the feats of the outstanding sons and daughters of our Soviet motherland.

The history of the fatherland is learned by the young military personnel during meetings with prominent fellow servicemen, in talks before the colors, and in solemn rites and rituals by monuments and obelisks, in corresponding with heroes of battles, in visiting troop museums and rooms of military glory, and in organizing special-subject evenings devoted to the military history of the unit, to its heroes and to those who now have taken up and are carrying their baton.

The Communist Party and the Soviet people are constantly concerned with strengthening the defense capability of the nation and raising the combat readiness of all the services of the Armed Forces. This concern is clearly apparent also for military aviation. In possessing great strike power, it is capable of influencing the outcome of major military operations and independently carrying out responsible missions both in land and sea theaters of war.

The might of the modern weapons and military equipment is continuously increasing. And it is essential to learn to get a maximum of those capabilities which reside in them. It is important to be able to hit the enemy at great range, often outside of visual visibility, with the first round, with the first missile launch, the first bomb, using for this all the speed, altitude and maneuvering qualities of the combat aircraft.

In preparing for a flight and carrying out missions, a decisive role is played by the aviation commander. He teaches his subordinate pilots piloting techniques, the art of maneuvering and firing and the tactics of aerial combat. The level of combat readiness largely depends upon the pedagogical and organizational abilities of the commander, upon his ability and experience in organizing trouble-free flights, and in uniting and mobilizing the men. The experience of the leading commanders must be studied and disseminated in the other units and subunits in order that it can be more rapidly made available to all.

Well organized troop service, strong discipline, organization and efficiency play an important role in the struggle for high combat readiness and for the effectiveness and quality of instruction. Life in full accord with the requirements of the regulations and orders and a strict military way of life create conditions for constantly raising the combat readiness of the troops. This strict military order should always be under the constant supervision of the commanders, the staffs, political bodies and the party and Komsomol organizations.

In the nation with every passing day the intensity grows in the struggle to properly celebrate the 110th birthday of V. I. Lenin. The military aviators are preparing to

greet the noteworthy date with new military accomplishments. The flight and engineer-technical personnel is strengthening the combat readiness of their units and subunits in the daytime and nighttime flights with a feeling of great responsibility. Along with the men of the other services of the Soviet Armed Forces and the armies of the Warsaw Pact countries, they are vigilantly guarding the peaceful creative labor of the peoples in the fraternal countries of the socialist commonwealth.

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## ROLE OF FLIGHT COMMANDER IN PILOT TRAINING STRESSED

Moscow AVIATSIYA I KOSMONAVTIKA in Russian No 2, 1980 pp 10-12

[Article by Col Gen Avn S. Golubev, Hero of the Soviet Union and Honored Military Pilot of the USSR: "The Commander's Example in a Flight"]

[Text] After the take-off, having raised the wheels and the flaps, Lt A. Katko headed toward the zone. Reaching its center, he radioed the flight controller on the beginning of executing the mission and put the two-man trainer into its first figure. The instructor, Maj V. Zaytsev, carefully watched the actions of the pilot. His student was confidently mastering the flight improvement program, he had quickly picked up new elements, and had endeavored to do as his instructor taught. The flight commander had repeatedly commented to himself that in time he would make an air fighter.

But during this flight it seemed to the commander that Katko was piloting the aircraft carelessly. In turns, the altitude exceeded the limits for a "satisfactory" grade, and the entry into a vertical figure was not carried out at the proper speed, the G-load was created early and at the upper point speed was reduced below the acceptable. This alarmed the major. He endeavored to recall how the pilot looked before the flight. Everything was as usual. Before getting into the cockpit, the lieutenant had certainly reported with excessive good cheer: "Comrade Major, ready for the flight!" But this also could have been a sham. It was essential to take a closer look.

Having carried out the set groups of aerobatic figures, the pilot returned to the airfield and began his descent. In entering the circle, in lowering the wheels and in the final glide, the instructor noticed one mistake after another. But he did not intervene in the pilot's actions as it was a check-out flight and the mistakes did not as yet involve real problems. Nevertheless, a dissatisfaction developed in the experienced instructor with his subordinate. A hazy awareness that the pilot had carried out the flight not to the full measure of his capabilities gradually became a certainty.

After landing, when the lieutenant asked for comments, Maj Zaytsev suddenly said: "What is the matter with you, Comrade Katko? You did not fly the best today."

Evidently the lieutenant did not expect this. He was perplexed but after an instant, confidently looking the commander in the eye, replied:

"Everything was normal, Comrade Major. I flew as I always do."

"What does that mean, as always?"

The major recalled how the evening before he had commended the officer for an excellently executed mission and used him as an example for his comrades. Moreover, the instructor began to recall that in talks with fellow servicemen they had begun to note in Katko hints of excessive self-confidence which had not been there before.

"Obviously, the commander has missed," thought Zaytsev with bitterness. "But it is still not too late to rectify the situation," and he made a decision:

"You are grounded. Learn, Comrade Lieutenant, to assess your achievements self-critically. And now go to the trainer and try to fly by the numbers. I will check tomorrow."

Not often can one see such a response by flight commanders to what was generally a satisfactorily executed flight. Was Maj Zaytsev correct in grounding the pilot that day? Certainly he artificially impeded his advancement through the program and this created difficulties for himself.

This question was exhaustively answered by the actions of the regimental commander who viewed the flight commander's decision as fitting and necessary for instilling in the pilots a feeling of responsibility and a conscious attitude toward their preparations.

And this was completely correct. The flight commander is the first teacher and mentor of the flying youth. The development of the air fighters and their mastery of the complicated aviation equipment, the procedures and methods of the combat use of the powerful weapons depend on him. Being continuously with his subordinates, a flight commander prepares them for flights, and on the ground and in the air he teaches them everything that is essential for the successful execution of combat operations. Moreover, when necessary, he is the first to lead them into battle. Consequently, like no one else, he has a better knowledge of the capabilities of each of his subordinates, and knows the level of the moral-political and psychological conditioning, his character, inclinations and abilities. In daily practice this makes it possible to develop the required professional qualities in the air fighter, and to shape in him the finest traits of a citizen and defender of the socialist fatherland.

A flight commander is given great official rights and great responsibility for the training and indoctrination of subordinates. But in order to have the moral right to teach them and to lead them, a flight commander must be an instructor. This means that he must skillfully master the aviation equipment under all conditions. His authority begins with this. As an instructor, the flight commander should not only have a precise knowledge of the procedures, but also personally carry out a demonstration or introductory flight in an exemplary manner. He should be able to describe the actions during the flight while still on the ground, and later in the air precisely carry out the functions of an instructor-pedagogue in executing one or another element of the flight mission. He must be able to find, explain the cause and take measures to eliminate the mistakes which a trainee makes. In other words, the commander must not only have an excellent knowledge of the aviation equipment, but also the principles of pedagogics and flight psychology, and possess firm

procedural skills and a high level of conduct. Certainly the subordinates endeavor to equal the commander. And the flying youth, in easily taking up a correct example, unfortunately, also assimilate shortcomings.

Thus, in instilling in the pilots purposefulness and tenacity, firmness in executing the taken decision and the ability to instantaneously assess the situation, the instructor should first of all master these qualities himself, he must constantly improve himself, not be content with the achieved level and always self-critically assess his preparedness.

Certain flight commanders assume that the necessary qualities can be developed in a pilot only in the air, and for this reason place all their hopes on the flights in the combat trainer. For example, convoluted figures, flights in different battle formations, in clouds, during the night, and so forth. Undoubtedly, all these types of preparation are complicated and require great efforts and pedagogical skill from the instructor in order that a pilot in a minimum number of flights masters everything as is required. However, there have been frequent instances when the trainee did not keep in the required minimum, and had to make additional flights, and as a result the professional development of the pilot was delayed and the two-man trainers were used unproductively and were overworked. Due to the insufficient pedagogical skills of a flight commander in passing on his experience to subordinates, there is an increase in the so-called "empty flying time," and the flight advancement plan of the flight commander as the instructor is not fulfilled under the more difficult conditions. As practice shows, this is the result of a miscomprehension of the role of ground training, independent work by the aviators and the importance of systematic work by the squadron commanders on improving the pedagogical skills of the instructors.

The training literature, various procedural aids, diagrams, working stands and models, multifunction trainers, exercises and training sessions directly in the aircraft, special films and, finally, examples from aviation history make it possible for a pilot to acquire the necessary knowledge, skills and qualities while on the ground, and in the air it merely remains to reinforce them. Of course, this is possible with the comprehensive use of all the pedagogical means and with the two-sided tenacity of the trainee and the instructor.

Maj Zaytsev, for example, explains in detail only what is not found in the training literature, or when he sees that a subordinate in fact has not understood something. But the pilot's training is based upon his independent preparation with a subsequent detailed description of the mission to the flight commander. As much time as is required is allocated for this.

However, the work of a flight commander with the pilot being trained in the air is equally important in the commander's self improvement and in the growth of his pedagogical skills. Here one can most vividly see the principle: "Teach others, learn yourself."

What was said on the ground is now demonstrated in flight. The main thing is that this is done with pedagogical skill, and more independence is granted to the trainee. Then the postflight analysis will be more effective. The reason for this is also that the instructor releases his subordinate in the air with full confidence that he will carry out the mission with high quality. And here is found the factor of

moral-psychological stability in a pilot, and this cannot be spotted in those whom the commander is continuously harrassing over the slightest details.

Success always comes to those commanders who in the training process employ an individual approach. And this is completely correct for there are no persons with absolutely the same capabilities and characters. Consequently, not everyone can be taught with the same methods. And of course, one can scarcely dispense with mutual respect and frankness. But this in no way means that the commander should play up to his subordinates. He always should remain the commander: exacting and responsive, strict and sincere, a demanding and respectful person.

The flight commander, Capt A. Chuykin, a first-class pilot and instructor in all-weather flying, has merited authority among his fellow servicemen. And although commander is not many years older than his subordinates, he has a good deal of flying experience. Not only the flight pilots listen to his opinion. A professional atmosphere has been created in the subunit, the men are clearly aware of their missions and the goals which must be reached by the year's end, they prepare carefully for the flights and fly with great zeal. The commander devotes a great deal of attention to the moral-psychological preparation of his subordinates, particularly during the period of mastering complicated exercises. He skillfully combines trust with strict control.

At one time Sr Lt V. Yeremeyev was carrying out a check-out flight at night on the two-man trainer with an inspector. After landing, the senior chief noticed that the pilot was excessively tense and had made mistakes. But during the introductory flights this had not been the case. Chuykin spoke with Yeremeyev, calmed him, and advised him to do everything as he was accustomed. And this helped. In the subsequent flight, there were no mistakes.

Consequently, to support a person at the crucial moment, and instill confidence in him is an important trait of an instructor. No matter how regrettable, not every person can be taught to fly, in the same manner, not every pilot, even the best, can become a true commander, an indoctrinator and organizer of the combat training process. This is shown by practice and the history of all our aviation. At the same time, in promoting a pilot to the position of flight commander, some persons are little concerned over whether he will be able to unify the collective, and make out of it a completely battleworthy subunit ready to carry out combat operations under any weather and tactical conditions.

It must be said that certain unit commanders do not fully understand the role of the flight commander in the development of air fighters, and give little attention to their instructor skills. As a result, the burden of teaching the new types of flight preparation rests on the leadership of the squadron and the regiment who, in essence, are not performing their functional duties. The principle is violated that "the commander teaches a subordinate." The authority of the immediate indoctrinator is undermined. If a flight commander does not fly as an instructor under certain conditions, he remains on the sidelines of the immediate training of the pilots, he shows little initiative, and ultimately the organization of combat training in this flight suffers.

It is completely unacceptable when a leader, in flying unsystematically, takes his seat in the instructor's cockpit instead of the flight commander. As a rule, in

such instances he does not promptly spot errors, he is late in intervening in control, and instead of correcting the pilot's mistake and piloting from the instructor's seat, himself errs and involuntarily participates in creating a potential flight accident.

Such a situation cannot be tolerated. It must be remembered that only the instructor should train a pilot, for each indoctrinator, along with the generally accepted pedagogical procedures, has his own ones which are inherent only to him. In no instance should these be ignored. This experience must be analyzed, studied, generalized and introduced in the other collectives. Differences in educational methods have never brought success.

The pedagogical councils of the units play an enormous role in elaborating a uniform approach to the training and indoctrination of flight personnel. Thus, the flight section of one of them is headed by Lt Col R. Kuadzhe, an experienced pilot and good pedagogue. At the sessions of the section, the command personnel discusses various procedures and methods and the experience of advanced instructors. All the best which is of practical interest is tested out in commander flights. The conclusions are generalized and as recommendations are introduced into the instructor practices of the flight commanders. Here particular attention is paid to new types of training. In addition to this, each month the section analyzes urgent problems which arise in the process of the daily combat training activities of the regiment.

The questions of training the instructors and indoctrinating the indoctrinators concern a majority of the leaders who are sincerely involved in the training of air fighters and in raising the combat readiness of the units and subunits. This can be seen from the articles on the pages of the journal AVIATSIYA I KOSMONAVTIKA by the officers and generals who have participated in the discussion of the articles "At the Head of the Flight" (No 11, 1978) and "Ahead of the Fliers" (No 2, 1979). Here the authors, experienced pilots and aviation medics, on the basis of their personal observations and experimental data, voiced their opinion on the role and place of the instructor in the combat development of the winged defenders of the motherland.

The writers were concerned by the question of the independence and initiative of the flight commanders. These articles gave convincing examples when, as a result of effective work by the senior commanders and chiefs with the flight commanders, high results were obtained in the combat training of the subunits and units. Recommendations were given as to what must be done so as to raise their pedagogical activities to a high scientific and practical level.

Undoubtedly, without giving the instructor the right to initiative and to freedom in choosing the effective teaching methods approved by the pedagogical council, one can scarcely count on a high quality of professional skill among the pilots. Not to take over for the flight commander, not to reduce his authority, but rather to teach, to help, and to be constantly concerned with the growth of his procedural and pedagogical skills--this is one of the most important tasks of the squadron and unit commanders. A commander who does not provide the prompt training and preparation of the instructors inevitably dooms himself to failure. Such units, as a rule, are constantly in turmoil due to the shortage of instructor personnel, the missions are carried out unrhythmically and ineffectively, the plans are underfulfilled or fulfilled, but with a great strain.

It is no easy thing to make a good indoctrinator-commander or instructor from a pilot. It is very important to spot in people educational skills, develop them and gradually prepare them for commander activities. For example, having announced the candidacy for a position of flight commander, within a definite period it is essential to train the pilot for flights from an instructor's seat under visual flight conditions, and after his appointment improve his training further up to the level of 1st class.

The training and indoctrination of the indoctrinators on the primary level should be a matter of constant attention for the political bodies, the party and Komsomol organizations and the pedagogical councils of the units. It must be remembered that combat readiness depends completely upon the training level of the air fighters and upon the mastery of the pedagogue, the instructor-commander.

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## DEVELOPMENT, TRAINING OF ACE AIR NAVIGATOR TRACED

Moscow AVIATSIYA I KOSMONAVTIKA in Russian No 2, 1980 pp 12-13

[Article by Col K. Sen'kov, Honored Military Pilot of the USSR: "That A Way, Navigator!"]

[Text] Capt V. Moshkin checked the readings of the course instruments and noted with satisfaction that the flight was going right on plan. He pushed the intercom button:

"That a way, Commander! Second Navigator, measure drift."

Now to enter the necessary data in the flight log, and ahead was a straight line for 30 minutes.

A straight line.... Did this mean that the navigator for a long period of time could be distracted from his duties? Modern navigation equipment in an aircraft, no matter how advanced it is, still requires constant attention and control. Having made the necessary notations, Moshkin leaned back in the chair. His glance skipped slowly across the numerous instruments, switches and buttons. And although there had been a pause in the work, it had become his custom or need to constantly monitor the position of the arrows and counters. This had been developed in the process of his daily intense labor.

...Viktor Moshkin completed the higher military aviation navigators school with honors. He was lucky. The personnel in the unit to which he was assigned as ship navigator carried out various and complicated missions such as long flights with midair refueling, the opening up of new unexplored routes, and combat application under the most complicated situation. It was not easy. But on the other hand better conditions could not be thought up for the making of a real navigator.

In the unit he encountered a close knit and experienced collective. Officers V. Artem'yev, P. Ryzhkov, V. Lipskiy and N. Beloborodov were able and intelligent mentors who possessed high pedagogical skills.

Viktor Moshkin steadily acquired new knowledge, and endeavored to gain a maximum of the essential from each exercise, training session or flight. He rapidly picked up everything that his instructors taught. The efficiency of the young officer and his curious mind were noted by the command. Soon Moshkin was appointed to the position of detachment navigator, and then squadron navigator.

The 25-year-old officer was now responsible not only for his personal mastery but also for the state of navigation in a large subunit. The work was troublesome. For example, for just one flight he had to glue up a chart the length of which reached 10 m. And how much ability, skill and labor were needed to bring these charts into a working state. This was just one aspect. The other was that under his leadership were the navigators of the detachments and aircraft who had to be taught to correctly make up the flight documents and helped in mastering all the fine points of navigation. Was this simple? As an example, in the high latitudes the magnetic deviations are great, and it is hard to determine the course, since magnetic compasses do not work accurately. The North Star is straight overhead, radio navigation, as a rule, is "jammed" by the magnetic storms caused by the Northern Lights, and in the winter the polar night lasts 24 hours. The main concern of the squadron navigator is to teach the navigators, particularly the young ones, to act correctly and confidently with the special equipment in order to carry out the combat mission on the first run.

A special place in his activities has been assumed by work with the experienced navigators. In the squadron there were aircraft navigators with scarcely fewer years less experience than Sr Lt Moshkin was old. It was essential to find the key to them. And Viktor found it. It was his personal mastery and authority which in aviation is won only by the excellent execution of flight missions, by exceptional discipline and conscientiousness in everything.

The young specialist was greatly aided by the squadron commander, Lt Col A. Morgatov, and by the party and Komsomol organizations of the subunit and unit. The very experienced commander helped his young deputy both by words and by advice, and when necessary, by his authoritative decision supported the initiative of the navigator.

...Viktor imagined Lt Col Morgatov holding the controls in his broad hands, and closely watched the instruments.

"Navigator, drift plus 3, wind 120°, 90 km an hour, route...altitude...," Moshkin's thoughts were interrupted by the Second Navigator.

"Roger, OK."

He glanced at the chart. It was all light blue. A flight over the ocean is not simple. Control, constant control. One cannot hope for help from the ground in navigating. The homeland is far away. And here is where navigation expertise is essential. Not everyone is permitted to fly over the ocean. This is no place for an untrained person.

Regardless of the fact that the automatic equipment was working precisely, again came the request over the intercom:

"Time to check the true course from the astrocompass." A few minutes later came the report on the aircraft's course as measured by the reserve astroequipment. The difference was slight. Everything was in order.

"Comrade Commander, course correct, calculated time of turning point, 0943 [hours]."

"Roger, Navigator. Determine the place of the wingmen."

Capt Moshkin turned on the interplane navigation system, he carried out the necessary operations and reported to the captain that the aircraft in the group were in position.

Then again he began to check the navigation data. Although the equipment was reliable, it was still good to make certain it was working properly. There came to mind an instance when he had made a serious fault in a flight. Then Viktor was able to quickly find the cause, use the back-up equipment, and the crew successfully carried out the given mission. For this he had been commended by the commander.

But something else came to mind.

Sr Lt Moshkin had served 5 years flawlessly, he had become the navigator of an air squadron and a first-class specialist, and he was in good with the command, but then once....

Moshkin shook his shoulders. From the shame blood flooded into his cheeks each time he recalled this.

During that flight navigation was being checked by a senior chief. The experienced officer did not intervene into the actions of the navigator. The flight generally went well. Moshkin, having judged his work in this manner, left the aircraft without requesting comments from the inspector (since he felt that there should not be any), and headed off to the squadron hut. In this manner he violated an unbreakable rule in aviation: no matter how excellently one flies, one must ask the instructor: "Are there any comments?" At the same time, the inspector actually did have comments on the work of the navigators, and in addition to this, a flight analysis had been prescribed by the rules. Obviously Moshkin had become conceited.

Precisely the same conclusion was drawn by the commanders and the chiefs. The squadron navigator was reprimanded.

Viktor thought this over a good deal and drew the correct conclusions. Now the reprimand has been lifted, he has been promoted in rank, and this instance forgotten, but it does disturb his soul, in reminding him that in flying complacency and a loss of professional vigilance have no place, and that one must always be self-critical.

Moshkin has devoted a great deal of attention to the training of the ship's second navigator. From flight to flight, he handed on to Vladimir Razvalyayev his experience in navigation and combat application. And now the aircraft actually has two navigators. His assistant is reliable and a worthy replacement.

Now Razvalyayev was precisely carrying out his duties and giving information accurately and thoroughly. They had received the mission unexpectedly, and had to take off rapidly. The mission envisaged a flight to the Pole. They prepared quickly but very carefully. In order to shorten the time and ensure the quality of the preparations, the navigators divided the work in half. Having done his share, Moshkin monitored the preparations of his assistant. Everything was in complete order.

...The flight was continuing. The navigator reported to the commander that the group had reached the maneuvering area. Each specialist on board was busy with his job. A little time later, Moshkin gave the commander the heading back. The aircraft turned. "That a way, Commander!"

Moshkin remembered his first command "That a way!" in a combat course to the training range. How his heart beat loudly when the sight cross approached the target. And although there had been training on a trainer, dry runs over the target, this was his first bomb. Was that the course, or did he turn more than necessary, and where would it fall?

Later there were many such commands. And in reply he heard: "Right, that a way!" The missiles flew precisely toward the target, the bombs fell on the mark, and the aircraft, breaking through heavy clouds, always returned precisely to the home airfield.

The way home was always pleasant, but this did not make it any easier. In a multi-hour flight over the ocean, due to the absence of markers, route computing errors accumulate, and the correcting of the automatic devices is difficult. This requires jeweler-like precision from the navigator.

After the landing of the group, thanks were expressed to the crew members, including to Capt Moshkin, for the excellent execution of the mission.

Last year, the navigator service headed by Capt Moshkin was recognized as the best in the unit. Lt Col Morgatov, usually restrained in praise, shook the hand of the captain, and firmly said: "That a way, Navigator!"

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## **GREATER ATTENTION TO IDEOLOGICAL INDOCTRINATION URGED**

**Moscow AVIATSIYA I KOSMONAVTIKA** in Russian No 2, 1980 pp 14-16

[Article by Lt Gen Avn M. Tsymbal: "If the Approach Is Comprehensive"]

[Text] Our socialist society is strong in the awareness of its citizens. The indoctrination of the new man who combines profound ideological conviction and great vital energy, spiritual culture and knowledge, has been and remains one of the chief concerns of the Leninist party. In viewing the development of aspirations for high social aims, unshakable ideological conviction and an active vital position in Soviet people as an important front on the struggle for communism, the 25th CPSU Congress clearly defined the basic areas of ideological work, and pointed to the main path for a further rise in its effectiveness. This is a comprehensive approach to the organization of the entire question of indoctrination, that is, providing a close unity of ideological-political, labor and moral indoctrination considering the particular features of the various groups of workers.

The Decree of the CPSU Central Committee "On Further Improving Ideological and Political Indoctrination Work" is a new manifestation of the party's concern for improving the system of communist indoctrination of the Soviet people. It is of great fundamental significance for the ideological activities of the party under present-day conditions. The decree of the November (1979) Plenum of the CPSU Central Committee states that the party organizations must improve political and organizational work, directing it toward the greatest possible development of the labor activities of the masses, increasing organization and discipline, and strengthening personal responsibility of the cadres for the assigned task, for a further rise in the economy, science and culture, and the well being of the people.

The ideological work of the commanders, the political bodies and the party organizations in the aviation units and subunits is aimed primarily at developing communist awareness among the military aviators and creating a communist conviction in them. Precisely it, communist conviction, ultimately is that main thing which motivates the conduct of the aviators and their attitude toward service and toward carrying out their military duty. The task of instilling such conviction is carried out comprehensively, in all the areas of indoctrination. As is known, the basic forms of the ideological conditioning of the personnel are the Marxist-Leninist training for the officers, political studies of the warrant officers ("praporshchik") and political exercises with the soldiers and sergeants.

Practice indicates that in those troop collectives where unflagging attention is devoted to these forms of ideological conditioning, where constant concern is shown for raising their effectiveness and results, here the successes are greater in combat training, and military discipline is stronger. For example, in the unit where Officer A. Kostyrev is the political worker, Marxist-Leninist training of the officers has been well organized, and the questions of their ideological growth comprise a subject of special concern for the communist leaders and the party organizations. Here in addition to lectures and seminars, in theoretical studies they widely use abstracts, colloquiums, theoretical and pedagogical conferences and reviews of political literature. Lenin lectures are organized for the officers, and information is given on political subjects. The questions of ideological development are regularly discussed in the party organizations. It has become a system to hear reports by communists at the party meetings and bureau sessions on their work in the area of improving political knowledge. All of this has told positively in the work. Ideological conditioning arms the aviators with a more profound understanding of the tasks which life has posed for them, and impels them to work at full force and to continuously increase the successes in military and political training.

As is known, the effective mastery of Marxism-Leninism requires great, complex and intense work, the constant adding to and renewal of knowledge, and its successful application in practice. V. I. Lenin warned that "science for us has not remained a dead letter or a fashionable phrase (and this, it is no sin to hide, happens rather frequently among us) in order that science actually become flesh and blood and be turned into a component element of our life fully and properly." These words of Lenin remain fresh and have a modern ring for all communists, in particular for workers on the ideological front.

Practice shows that an individual approach to people is particularly important in the shaping of ideological maturity. And naturally, the commanders, the political bodies and the party organizations pay constant attention to the independent study of the military aviators, and endeavor that each of them develops an inner need for political self-education, for studying the works of the founders of Marxism-Leninism and the party documents, as well as a strong desire to broaden their ideological and theoretical viewpoint. As was pointed at the 25th CPSU Congress, under present-day conditions, where the amount of knowledge needed by a person has increased sharply, it is no longer possible to rely on the mastery of a certain amount of facts. It is important for each person to acquire the ability to independently add to his knowledge and make his way in the rapid flow of scientific and political information.

In carrying out a comprehensive approach to the indoctrination of military aviators, the commanders, the political bodies and the party organizations in their daily activities combine ideological-political indoctrination with labor indoctrination, with the development in each aviator of a conscientious attitude toward military labor and a desire to master the aviation equipment and weapons and make his contribution to the success of the subunit or unit. As is known, labor indoctrination under army conditions in a way fuses with military indoctrination, and in a unity with the other forms of indoctrination instills in the servicemen such qualities as loyalty to their duty to the motherland, vigilance, tenacity, a profoundly felt desire to improve military skills--all those qualities which are essential for the military in successfully defending the victories of socialism. They are formed on the basis of communist ideological conviction in the process of military and

political training and all military service. The greatest results are achieved in the instance that this process is organized in strict accord with the requirements of modern combat. It must not be forgotten that the concern for the precise organization of flights and the service of the men is also a concern for indoctrinating strong air fighters capable at any moment of carrying out the given mission, no matter how complicated it might be.

If ideological and political indoctrination actively contribute to a profound understanding on the part of each military aviator of the goals and tasks of communist construction and the tasks confronting our Armed Forces, then moral indoctrination pursues the aim of giving the solution of these problems a personal nature, to develop in the men a moral idea which insights them to active social actions. The main aim of moral indoctrination, as was pointed out by the 25th CPSU Congress, is to develop an active position in life for each Soviet man. Under army conditions, moral indoctrination of the personnel is permeated with the specific provisions of the military oath and troop regulations which embody also the moral standards and principles of communist morality.

Ideological loyalty and morality are organically linked, and in their unity they determine a person's attitude toward society, toward the collective, toward labor and daily affairs. At the same time, each of these facets of spiritual makeup has its own inherent features which must be considered in the process of indoctrination. Political and moral awareness, in being organically fused in the spiritual makeup of the individual, maintain relative independence. Their specific features can serve as the reason for a situation where, for example, an aviator is politically strong and possesses the proper professional qualities, but is not sufficiently mature on the moral level.

A unity of ideological loyalty and morality, as is known, is expressed in the consistent communist behavior of a person in labor and in everyday life and in relations with other people. As V. I. Lenin said, a textbook knowledge of communism with the inability to carry out this knowledge gives rise to uncritical readers and boasters. On the other hand, the best intentions of a person who has not developed ideological conviction in himself can lead him to mistakes in difficult situations, and under certain conditions turn him into a philistine remote from the interests of the collective and the nation.

In forming the moral qualities of military aviators, we must not underestimate their capacity for self-indoctrination. The effectiveness of indoctrinal effects, as experience shows, is particularly high when the persons being indoctrinated take countersteps in their moral development. The commander and the political worker determine whether or not the men try for self-indoctrination. Friendly advice, sincere recommendations, approval, and the expression of confidence that a subordinate can become stronger, better and more active are capable of creating that moral position which stimulates self-indoctrination. Familiarization with the vital experience of our outstanding people provides instructive examples of moral development and the serving of our common cause.

In the indoctrinal activities of the commanders, the political workers, the party and Komsomol organizations, a special place is held by the socialist competition which is widely used for further developing the creative initiative of the military aviators. It acts as a powerful means of military indoctrination, for it

is directed toward the hearts and minds of the men and toward their patriotic feelings. In actively carrying out the basic principles of the competition such as publicity, comparison of results, and the dissemination and introduction of advanced experience, it is important to more fully consider the moral aspects of the rivalry so that in the course of the struggle to carry out the high obligations the military aviators develop such remarkable qualities as friendship, comradeship and that a deed inevitably follows their word.

The moral example of a commander or political worker plays a major role in the indoctrination of the men. Their attitude toward service and conduct in each specific situation are particularly perceived and experienced by subordinates. From how the commander or political worker carries out his service duties, observes moral standards, how exacting he is with himself, how honest in relations with seniors and juniors, and clean in everyday life, not only are his merits judged but also the truthfulness of our spiritual values which are embodied in a specific person.

It has been pointed out that the greatest successes in combat training and service are ordinarily achieved by those officers whose moral makeup is attractive, honest and clear. The indoctrinator who is able to be as strict with himself as he is with subordinates always serves as a model for imitation. For example, the commander of the outstanding squadron, Lt Col S. Solntsev, is precisely such an indoctrinator. He is marked by a great strength of will, demandingness for himself and subordinates, sensitivity and attention to them, honesty and the ability to always reinforce a word with a deed and to steadfastly carry out the orders and instructions of senior chiefs. For precisely this reason any demands, suggestions, recommendations or requests of the commander are perceived by the aviators as proper, just and correct.

In the course of daily combat training, a commander or political worker must often choose between duty and personal convenience, principledness and friendly relations with fellow servicemen, collective and individual interests. And each such choice strengthens the moral convictions of an officer and the persons around, and affirms belief in the truthfulness of the moral principles of our society. Honesty and justice in everything, in major and small things, cannot remain unnoticed; they are also instilled in others. All that is socially valuable in the makeup and conduct of a leading officer or activist becomes the property of the collective.

The personal example encompasses the political, professional and moral qualities of the leader, and it to a decisive degree determines his authority. Here it is not always essential to have measures of an agitation plan or an explanation of the merits of a leader. This is the difficulty and, simultaneously, the wisdom of moral indoctrination: people usually without superfluous words pick up on the virtues and failings of an individual, in properly assessing his moral makeup.

It is essential to point out that a rise in the personal responsibility of a leader is directly related to the development of criticism and self-criticism in a collective, to the prompt prevention of such phenomena as an inclination for boasting, the concealing of shortcomings, the absence of publicity in social affairs, that is, everything that impedes service, discipline, and the political and moral indoctrination of people.

An analysis of the state of military discipline shows that a majority of the infractions of the regulations and the requirements of the documents regulating flying is also the nonobservance of our moral standards. Sometimes in certain subunits instances are encountered related to the violating of the standards of relationships between fellow servicemen. These instances are individual and atypical for the military collectives, but nevertheless we should not accept them. If a situation of intolerance of any manifestations of conceit, coarseness, disdain, hypocrisy and so forth has been created in a collective and examples of nobility, loyalty to the given word and accepted obligations are encouraged in every possible way, then in the moral relations of the aviators, motives are created and deeds and actions appear which correspond to the requirements of the regulations and to the principles of communist morality.

A good deal of experience in moral indoctrination of military aviators has been acquired in the unit where Lt Col I. Konstantinov is the chief of the political department. At conferences, seminars and assemblies of the commanders and political workers here they regularly bring up the questions of the ideological and moral indoctrination of the personnel. The political department constantly instructs the propagandists, party and Komsomol activists on these problems. The questions of morality are periodically discussed at party and Komsomol meetings. For example, recently in the party collectives there was a major discussion of the subject "your position in life as a communist." In the plans of the agitation and propaganda collective a significant place has been given to the problems of moral indoctrination. The club and library workers are actively involved in the moral indoctrination of the aviators. They organize meetings with veterans of the party and Great Patriotic War, discussions of books dealing with moral purity, courage, and valor of the Soviet people. As a result, a healthy moral atmosphere is formed in the collectives, and there are no instances of abnormal relations between servicemen.

Unfortunately, not all commanders as yet have profoundly understood the increased significance of moral indoctrination of the personnel as an organic part of a comprehensive approach to indoctrination. For example, in the unit where Officer V. Nebylitsin serves, until recently in the mass political work there were no interesting lectures, youth debates or special-subject evenings on the rules of the socialist community, on the moral and ethical standards of conduct, or on the moral duty of the soldier and citizen. The Air Force political directorate, had to intervene and remind certain officials of the well-known truth that where they forget the necessity of a constant and tenacious struggle for the minds and hearts of people, inevitably there are reoccurrences of an alien ideology and deviations from the socialist standards of morality.

One of the important areas in improving the moral indoctrination of military aviators is to develop in them irreconcilability against all that is amoral or foreign. Even individual manifestation of selfishness, individualism, materialism or acquisitiveness is unacceptable. It is essential, as was pointed out at the 25th CPSU Congress, that the growth of the material possibilities constantly be accompanied by a rise in the ideological, moral and cultural level of people. Otherwise we can obtain reoccurrences of philistine, petty bourgeois psychology.

One cannot help but see that bourgeois propaganda at present is endeavoring to influence the awareness of the servicemen in the socialist armies and is particularly wagering on moral problems and spiritual values. As was pointed out in the Decree of

the CPSU Central Committee "On Further Improving Ideological and Political Indoctrination Work," our duty is to resist the subversive political and ideological activities of the class enemy and its evil slander of socialism with unshakable conviction and political vigilance by each Soviet person.

The finest traits of the military aviators are manifested in the conscientious fulfillment of their military duty, in organization and discipline. Their high general educational preparation, their broad knowledge and increased spiritual needs create a favorable atmosphere for the activities of the commanders, political workers and party activists in improving the entire process of the ideological and moral indoctrination of the winged sons of the fatherland.

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## USE OF MOBILE TACTICAL RANGE IN AIR COMBAT EXERCISES DESCRIBED

Moscow AVIATSIYA I KOSMONAVTIKA in Russian No 2, 1980 p 19

[Article by Maj A. Drozdov, Military Pilot 1st Class: "The Tactical Range. How Is It Used?"]

[Text] The day was exceptionally sunny. And the next pair of "Migs" were taking to the air. The wingman, Capt V. Dergachev, pushed the air brake button and the fighter bomber increased its distance. Such a battle formation provided the best conditions for the flight. The mission of the pilots was to detect and rapidly transmit the location of "enemy" nuclear missile attack weapons.

Under the wing flashed clearings, fields and forested areas. The pair reached the search area. The attention of the pilots was strained to the limit. The leader put the aircraft into a turn. And 100 m away from the road for an instant there appeared the characteristic outlines of transport vehicles and the cigar-shaped missiles lying on trailers. The pilot was able to fix their position and a clearly noticeable marker, and reported to the controller at the tactical range:

"Target spotted. We are attacking!"

The pair executed the combat maneuver and made a precise strike. Having left the battlefield, the leader transmitted to the command post the coordinates of the position of the nuclear missile weapons. The air fighters received an outstanding grade. The flights of Capts A. Tarasov, Ye. Teleganov and others on that day also were given high points.

In this subunit, the pilots systematically fly out to the tactical range. It is usually deployed in an unfamiliar area, and the targets are located on terrain inaccessible to air detection. And from mission to mission the air fighters hone their skills in conducting reconnaissance, and learn to expertly destroy small-sized "enemy" targets. Such flights help them in carrying out missions in tactical flight exercises on a high level.

It is not an easy thing to seek out small-sized ground targets on a supersonic missile-carrying aircraft. Free search requires training, attentiveness, instantaneous responses and excellent piloting techniques.

At times it is impossible to visually detect a small-sized object from great or medium altitudes. For this reason the pilot must hug the ground and this leads to

narrowing the sector of view and an increase in the angular velocity of the moving of ground objects. The aircraft skims over them for a fraction of a second. Of course, the crew is helped by radio equipment, but this does not free it of the need to conduct a visual search.

The missile-carrying aircraft are equipped with complicated electronic computer systems which support the flight along the route with great accuracy. The main thing for the pilot is to maintain the set conditions. But in searching for a target, the electronic equipment does not help, and one must rely solely on oneself and on one's skills. For this reason, high training in visual flight is a most important aspect in the tactical skill of a pilot.

Here a special role is played by the ability to rapidly understand a complicated tactical situation on the battlefield. As is known, with the use of modern types of weapons this can change rapidly and unexpectedly. The battlefield full of troops and diverse equipment is a complicated map which the pilot should be able to read at first glance, in flight, for there is not much time to view it. In the search area, the crew must rapidly establish not only its own location, but also over what element of the enemy battle formation it presently is, determine what targets can be located nearby, where they are and how many of them in the given quadrant.

All of this the pilots learn in flights to a tactical range. In combat training the execution of such missions brings great benefit to the aviators. However, as practice shows, a tactical range is not always fully utilized. Often an exercise for combat application using photomonitoring devices are carried out on a stationary range, where the pilots have long learned the target set-up, the particular features of the approach, the combat course, and so forth. This does not provide a substantial effect in professional growth. But a tactical range possesses enormous possibilities, the main one being mobility. Here the target set-up can be quickly altered. For example, after the flight personnel has worked through the initial exercises, it is advisable in subsequent flights to complicate the situation to a maximum degree, and for this the dummies should be moved to a new, specially selected place considering the nature of the terrain for camouflaging. Here an unique competition arises between the range team and the flight personnel involved in the flights. Experience shows that such an organization of the work forces the pilot to think more broadly, and to put himself in the place of the "enemy" in selecting the area for the positioning of troops and equipment. As a result the training work of the aviators comes close to the conditions of actual combat.

It has been official to have close cooperation between the chief of the tactical range and the command of the unit the pilots of which are using the range. In our view, this would make it possible to create a maximally instructive situation essential in working out certain problems of combat application. Then the commander could merely give the quadrant, set the mission for the pilot considering the safety measures and demand an independent search for a solution. This would contribute to the further growth of the quality of the air, gunnery and tactical skills of the aviators.

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## MAINTENANCE PROCEDURES FOR OUTSTANDING PLANES REVIEWED

Moscow AVIATSIYA I KOSMONAVTIKA in Russian No 2, 1980 pp 34-35

[Article by Maj Tech Serv A. Trushinskiy, Deputy Squadron Commander for Aviation Engineer Service: "The Emblem on the Fuselage Poses Obligations..."]

[Text] Imagine the following picture. The technical crew by hard work had brought its combat aircraft up among the outstanding. On the fuselage appeared the emblem "Outstanding Aircraft of Unit." And here the specialists would not mind thinking that they could let up a little and reduce the tension in work and training.

And such an opinion has brought down certain technicians as in a short period of time they showed omissions in readying an aircraft for flight. The thing even went so far that the insignia had to be taken off the fuselage. Here is how dangerous it is for a specialist to become complacent with the achieved level, and not make a greater effort to further improve aircraft servicing.

Considering the possibility of complacency among the technical crews the aircraft of which are considered outstanding and most importantly, for reinforcing the achieved successes, in our unit we conduct great indoctrinal work with the technical personnel. The leaders of the squadron IAS [aviation engineer service] watch how the technicians and mechanics train, and how new methods of inspection, preventive maintenance and protection of the combat aircraft are introduced. Because of this, the leading technical officers firmly keep the title of outstanding for their aircraft. The honorary pentagons for a long time decorate the sides of the aircraft assigned to them.

Among the best IAS specialists one could mention Sr Lt Tech Serv V. Myakishev. The officer irreproachably organizes the ground preparation of the aircraft. But we still found something for him to improve. Recently, upon an assignment of the deputy squadron commander for the IAS, he developed cooperation between electricians, ordnance workers and other specialists in working on the aircraft. He himself has mastered a related specialty. In the course of the tactical flight exercises and training sessions V. Myakishev has demonstrated the ability to work as an aviation gunnery mechanic. He has mastered all the types of preparing and supplying the aircraft with various ammunition, and can lead the mechanics group of all the services in preparing the aviation weapons.

By joint efforts we have determined the ways for improving preliminary preparations. One of the successes is the careful planning of the forthcoming operations on the

aircraft. For example, when Myakishev had to remove the oxygen and air tanks for periodic inspection, the officer again reviewed the techniques of the operations, he compiled a list of tools and required materials. He reminded the mechanic of the work procedure. The specialists did not waste a single minute. Now all of us do this.

Certain technicians are not willing to entrust the execution of labor-intensive operations to their mechanics, and prefer to eliminate malfunctions in inaccessible places themselves, using the junior specialist merely as an assistant. And because of this, the mechanic is not always capable to carry out an assignment quickly and efficiently, nor show reasonable initiative.

Our technicians of the outstanding aircraft assign the mechanics not only such jobs as washing the aircraft or repainting parts. MO ("praporshchik") N. Khvedchenya, for example, under the supervision of Officer Myakishev, has replaced units, packings in pipe joints, and performed many other complicated operations. The mechanic skillfully allocates his forces, gives reasons for his actions, and finds the most rational solutions for the designated tasks. For this reason, in the exams and inspection checks, Khvedchenya demonstrates skill and good knowledge. For several years running he has kept the title of master, and helps Sr Lt Tech Serv Myakishev keep the title of outstanding for the aircraft.

This technical crew is again leading in the competition. For successes in military and political training, Officer V. Myakishev has been awarded the medal "For Military Services."

Another technician of an outstanding aircraft, Sr Lt Tech Serv V. Pugash, has also not stopped in his development. In the past he was a senior aircraft mechanic and a warrant officer. He studied the aircraft down to the last detail. We often entrusted V. Pugash with carrying out the duties of the flight maintenance unit chief, and conducting technical training sessions. The officer showed an exceptionally conscientious attitude toward assignments, he was punctual, and observed the strict sequence of the production process.

Thus, in training to replace the different weapons mountings, Pugash timed each operation performed by the technicians and mechanics. All the bottlenecks were discovered as well as the reasons for delays caused by the specialists. In the analyses he pointed out the shortcomings and suggested ways to eliminate them. Subsequently, in conducting training sessions, he gave the grades both for the quality and speed of the operations as well as for the technical efficiency and observation of safety measures.

The master of military skills Pugach demands precise reports from the specialists preparing his aircraft. He always knows what the radio mechanic or electrician intends to check on the fighter. He checks the presence of tools before and after the operation. He carefully monitors the course of preliminary or preflight preparations, warning against errors in the actions of subordinates.

As is known, a technical crew is obliged to have a perfect knowledge of the design and operating rules of the aircraft assigned to it. We constantly remind the technicians and mechanics of this, and often refer to the example of Sr Lt Tech Serv N. Khalin.

He arrived in our squadron from another unit where they used a different fighter from ours. It took N. Khalin just 3 months to retrain. But the specialist did not stop with this. For each quarter he assigned himself a subject. In his outline there were not only detailed studies of the hydraulic and air systems, controls, automatic fuel equipment, but also recommendations on their operation in various climatic conditions, descriptions of previously encountered failures and the method for preventing them. Sr Lt N. Khalin is frequently asked by the commander to speak to young fellow servicemen and conduct talks between flights.

Attention to the technical crews of the outstanding aircraft helps them to continuously improve their skills, and encourages the young to try to equal their betters, and to win the honorary pentagon, the symbol of the outstanding aircraft in the unit, for their own missile-carrying planes.

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## PROPER PLANNING, HANDLING OF MAINTENANCE CREWS URGED

Moscow AVIATSIYA I KOSMONAVTIKA in Russian No 2, 1980 pp 36-37

[Article by Lt Col G. Spiridonov: "Fat in the Fire..."]

[Text] The roar of the jet turbines fell silent. Silence fell over the airfield. The fighters were covered, and the aviation specialists went to rest. Only the deputy squadron commander for IAS [aviation engineer service], Maj Tech Serv S. Kokorev, was in no hurry to leave the parking area. With his habit developed over the years, in his notebook he was sketching in a plan for the next preliminary preparations. And having settled his routine affairs, he fell to reflecting.

His subordinates had serviced the sorties well. But the officer was not satisfied with everyone. He was disappointed by the mistake made by Lt Tech Serv P. Fedorenko who had accidentally pressed the lever of the emergency canopy release and thereby put the aircraft out of service for a certain time.

The consequences of the mistake were eliminated relatively quickly. But Kokorev was concerned by why one of the most conscientious and efficient officers had made it. Fedorenko was young, although his authority in the squadron was high. Possibly the reason was the lack of training of the lieutenant? No, he would soon take his exam for a higher class rating. He also could not be accused of negligence. What was the problem?

In order to answer this question, Kokorev tried to analyze the events in the same sequence only at a slower pace. And gradually everything became clear.

The officer had arrived at the parking area. He was in a good mood, joking with his comrades and talking with the mechanic. He carefully supervised the actions of the specialists who were checking out the aircraft. If Fedorenko had been upset over something, this would not have escaped Kokorev's attention. He had learned to understand the mood of his subordinates even from a change in the tone of voice and from excessive tension. And he knew how to restore the disturbed mental equilibrium.

Kokorev recalled that then there had been an unexpected command: delay in towing the fighters to the position as the weathermen had not given the forecast. The technicians usually occupied this pause by checking the ground equipment. Fedorenko worked like everyone else. When again the command came to tow the aircraft, he loaded the equipment in the tractor, got in the cab and headed to the technical position.

...The next morning, the major reported his opinion to the deputy regimental commander for the IAS. And in conclusion he said:

"I assume that for veteran technicians, an abrupt change in the inputs is nothing unusual, but for the lieutenant this put him at a loss. He had been tuned to the flights, then he gradually 'unwound,' and could not immediately get back in the new intense pace. And then I threw fat in the fire. Instead of encouraging the young specialist, instead of supporting and helping him, I shouted to take his place more quickly at the position. Fedorenko for a certain time was confused, and as a result the mistake arose...."

This instance caused the commanders and the leaders of the IAS to wonder whether they always considered the psychological state of subordinates, and did they prepare them to work under difficult conditions with a rapidly changing situation? And possibly, not only Kokorev at times instead of having a firm mobilizing influence on a shaken specialist, "poured fat on the fire," and intensified his confusion leading to a psychological break.

In order to avoid such situations, the leaders of the IAS and all the specialists in a number of units and subunits are trained considering the requirements of psychology.

...The technicians from a leading aviation squadron had assembled in the planning classroom at the command post of the IAS. They were giving assignments for the forthcoming flight day. The officers carefully listened to the instructions of the deputy commander for IAS, Maj Tech Serv K. Kalashnik. From time to time they made entries in their notepads.

"I have already enumerated how many sorties are planned for your aircraft. Now let us talk in detail of which pilots will carry out the bombing, gunnery and reconnaissance exercises. What will the weather be on the route and in the area of the range?"

Someone might wonder if actually there is any need to inform the technicians of such details? Certainly they have enough cares of their own.

The subunit feels that there is such a need. The common cause gains if the personnel of the IAS will be up on the missions carried out by the pilots. The technicians, correspondingly tuned in psychological terms, not only can inspect the aircraft prior to the sortie, but again monitor the condition of those instruments and units which will be particularly essential in the forthcoming flight. Moreover, such contacts give them an opportunity to better know the pilots and their individual features.

In knowing the flight mission, the technicians are concerned to coordinate their actions with specialists from the servicing groups and take safety measures. Before carrying out the most complicated exercises, in the squadron the technical personnel undergoes approximately the same questioning as the flight personnel so as to discuss the probable inputs down to the last details, such as: changing the types of suspension, fueling, and so forth. And no surprises then will catch them unaware.

On each flight shift, the flights, groups and crews compete among themselves. The competition is being carried out now with particular energy, during the period of preparations for the 110th birthday of V. I. Lenin and the 35th anniversary of the victory over Nazi Germany. Among the best are Komsomol members Lt Tech Serv A. Ivliyev and Pvt I. Solov'yev. For a long time this crew has kept the title of "Outstanding Aircraft of Unit" for its aircraft. The aviators are models of communist morality and military ethics.

The squadron is concerned for maintaining a professional psychological mood among the IAS specialists during the entire flight shift. Experience shows that by the end of the flights, particularly under nighttime conditions, fatigue appears in some, complacency in others, and along with this a loss of vigilance in readying the equipment for the next sorties. Mistakes are possible in this period.

The IAS leaders remind them of this. Ahead of time they send out party and Komsomol activists to the crucial sections. Supervision is strengthened over the less experienced specialists, and they are helped in overcoming fatigue or avoiding illusory sensations.

"Your aircraft to the very minute is keeping within the planning table. Try not to let down in the future. If you feel a difficulty, do not hesitate to come for help. We have experienced specialists in reserve," these words of support from seniors encourage a technician to work with previous enthusiasm, and observe strict procedures in working on the ground preparation of the aircraft.

Here an analysis of the flight shift has rightly become a school for disseminating advanced experience in aircraft operations. The deputy commander for IAS, the maintenance unit chiefs of the flights and the group chiefs analyze the work of each specialist and give it an objective evaluation. They voice their comments in a sincere manner.

...On the way to the airfield, Guards Engr-Capt D. Kuleshov more and more often looked at the sky. Grey storm clouds were rapidly coming in over the airfield. It was about to rain.

"Dmitriy Dmitriyevich [Kuleshov], training will probably have to be deferred. The weather is not favorable."

"On the contrary, the weather is suitable," argued the regimental aircraft and engine engineer. And in response to the confused glance, he explained: "What better time to check the skills of a technician. Thus the training will be carried out according to plan."

"But what if snow dusts the cockpit?"

"Then we will be particularly strict with the technician. But I am confident this will not happen."

And a training session at the parking area was held. The aviation specialists worked on complicated disassembly and assembly operations on the aircraft. In competing for the rapid and efficient carrying out of an assignment using the "Dudinskiy method," technicians in a record short time changed a wheel. And the

essence of the method employed by Guards Sr Lt Tech Serv O. Dudinskiy is in the parallel execution of two operations simultaneously: letting the air out of the tire and removing the fastening nut. Because of this it was possible to save several minutes.

The specialists precisely observed all the safety measures. During a discussion of the results of the complicated training session, the technicians voiced requests that such tests be held more often. After them any input is feasible.

In the collective where Sr Lt M. Lyapovoy serves, a majority of the aviation specialists are recent graduates of military schools. Undoubtedly, the young men have quite enough strength and energy, knowledge and desire to service modern aircraft. And they, like experienced technicians, have repeatedly demonstrated a psychological readiness to carry out the given missions. But there have also been examples of a different sort.

...It did not take great powers of observation to spot the fatigue in Lt Tech Serv D. Prokhorenko. In the preliminary preparations he had worked feebly and made mistakes. All of this could not be concealed from Officer A. Trushinskiy.

"What is wrong with you, Comrade Prokhorenko? Tell me, how did you rest before the flights?"

It turned out that the young specialist in the evenings often stayed up with friends. And this undoubtedly reflected on his work.

At a party meeting the squadron communists indicated to certain officers an absence of exactingness upon their subordinates and an insufficiently profound study of their professional qualities. In desiring to see the results of their work as rapidly as possible, individual IAS leaders responded by imposing disciplinary reprimands. But this did not tell on the behavior of the young men in the best manner. The party organization obliged each communist leader to raise his personal responsibility for the training and indoctrination of the personnel.

The senior regimental physician spoke before the young officers and he gave specific recommendations on organizing recreation. The squadron commander, the flight commanders and the leaders of the IAS visited the dormitory as well as the families of the young officers and studied their domestic conditions. In the course of frank talks, they more profoundly studied the characters, spiritual needs of the men and their attitude toward service.

Officers A. Trushinskiy, M. Mikhaylov, P. Chernyavskiy and others at the parking area or during the flights found time to tell the young men about the military traditions of the regiment and the successes of the personnel in the outstanding squadron. Interesting and instructive examples were given from their own service. Nor did they skip over the difficulties, which, in all probability, the lieutenants had still to encounter. At the same time they taught them to overcome them. They read letters received from former servicemen and presently students of the academies and higher military schools.

At present in the collective the situation has noticeably improved. The officer leaders skillfully employ various forms and methods of indoctrinating high moral and psychological qualities in their subordinates. It can be said with confidence

that here there are no indifferent persons. Each man feels the importance and responsibility of his purpose: to ensure the combat readiness of the flight crews and flight safety. And he views his involvement in this work as a serious test of political, psychological and technical maturity.

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## GREATER EMPHASIS ON DISCIPLINE AND ORDER STRESSED

Moscow AVIATSIYA I KOSMONAVTIKA in Russian No 3, 1980 pp 1-3

[Article by Col Gen Avn A. Medvedev, Hero of the Soviet Union: "Stronger Discipline and Higher Combat Readiness"]

[Text] Combat training is in full swing in the units and subunits of the Air Force. Having joined the army-wide socialist competition under the motto "Sacredly Carry Out Lenin's Legacy, Improve Military and Political Training, Increase Vigilance, and Always be Ready to Defend the Motherland and the Great Victories of Socialism," the military aviators are hard at work on carrying out the tasks related to mastering the difficult aviation equipment and its combat use, to strengthen the organization and teamwork of the military collectives, and raise their combat capability and readiness.

The results of the first months of training during the new year have indicated that the personnel in a majority of the units and subunits correctly understands the missions confronting them and is endeavoring to properly celebrate the 110th anniversary of the birthday of V. I. Lenin, the 35th anniversary of the victory of the Soviet people in the Great Patriotic War, and complete the 10th Five-Year Plan with new achievements in military service. These successes are undoubtedly related to a rise in the level of the ideological-political and organizational activities carried out by the commanders, the political bodies and the staffs.

At the same time, the commanders and political workers, the staff officers and the party and Komsomol organizations still have much to do to disclose the unutilized reserves and activate them for achieving the planned goals in military training. Special attention must be given to the political training of the aviators, to their ideological conditioning, to indoctrinating high moral-military and psychological qualities, and to strengthening the discipline and combat teamwork of the military subunits.

High moral-military qualities are instilled in the men by the entire way of army life. But they are shaped primarily by purposeful work in which the leading role is played by the solely responsible commander who organizes the training and indoctrination process.

Strong military discipline is one of the most important conditions for the constant combat readiness of the Air Force units and subunits. It is based on high political awareness and the ideological maturity of the fliers, and upon their profound understanding of their patriotic duty and wholehearted loyalty to the Soviet

motherland, the Communist Party and their people. The basis of Soviet military discipline is efficiency, and constant readiness to carry out the order of a commander without question, precisely and on time.

At present the concept of military discipline is becoming ever more profound and vaster, and is assuming a new content in which particular significance has been given to time discipline, technical discipline, and the discipline of combat duty.

And this is no accident. An aircraft is a collective weapon, and its successful use depends upon the training level, efficiency, and skills of each aviator as well as upon their overall organization. Under present-day conditions a mistake by one specialist caused by insufficient training or a lack of discipline can lead to the failure of a flight mission.

Scientific and technical progress in military affairs has posed a series of new and complex problems in the area of the training and indoctrination of the troops, and has noticeably influenced the demands made on the activities of the command personnel, the political workers, the party and Komsomol organizations. This is caused by the high technical level of the aviation subunits, by the fundamental change in the methods and forms of conducting combat operations, by a rise in the role of the moral-psychological factor, and by the complicating of the tasks not only in the training and indoctrination of the aviators, but also leadership of the aviation units, control of combat and the organization of cooperation between the branches and services of aviation with the units and subunits of the ground troops. In turn, these factors dictate the necessity of constantly improving the style of leadership and the methods of indoctrinational work.

One of the most important conditions for able leadership of the aviation units and subunits is a consistent struggle to strengthen military discipline and to have the scrupulous observance of the requirements of the regulations and other guiding documents by all servicemen. At the same time, a further strengthening of discipline depends completely upon serious and thoughtful training and indoctrination, and these should have a comprehensive character, be continuously added to and enriched by new effective forms and methods.

As is known, the commander organizes this work. He has been given the required full powers for carrying out the diverse functions entrusted to him, including operational-drill, political-indoctrination, administrative-housekeeping, mobilization, and others. But this in no way means that with his appointment a commander by the force of authority can solve all arising problems. The ability to command, to take intelligent decisions and actively carry them out does not arise spontaneously. These qualities come with time, with experience, often through conflicts with others and with oneself. The dependable guide on this difficult path is provided by party conscience, the honor and dignity of an officer, irreconcilability for eyewash and oversimplification, and a self-critical attitude toward oneself and everything which impedes one from scientifically organizing the combat training of subordinates.

However, whatever abilities a commander may possess, it is impossible for him alone to encompass the entire range of problems confronting the unit. A reliable and dependable support for the commander in carrying out the tasks of combat and political training is the party-political apparatus, the staff, as well as the party and

Komsomol organizations. As experience shows, success comes not to the officers who endeavor to take over for them, who intervene excessively or do not trust them, but rather to those who on a day-to-day basis are able to rely on the activists and intelligently direct their activities.

As is known the squadron, detachment or flight are the center of political indoctrination. Precisely in them in the process of training and service the aviators acquire the military knowledge and gain high moral-political, psychological and ideological tempering. An important role is played by the officer personnel and the junior commanders in the strengthening of military discipline and proper order.

Work with the officer personnel is under the close attention of the command, the political bodies, the staffs and the party organizations. The main thing in this is ideological conditioning, the indoctrinating of the communist leaders in high party qualities, discipline, and a sense of high personal responsibility for the state of affairs in the area headed by them. In no instance can one tolerate the attempts of individual officials to smooth over difficult situations in disciplinary practices or to depict the desired as the real. At the same time, one must in every possible way support exacting commanders who in the units and subunits establish firm proper order, and arm them with advanced experience in indoctrinating the personnel.

A thoughtful commander is well aware that the microclimate in the military collective and the nature of the relations between the men and, consequently, the course of military training will depend upon the effectiveness of the work done by the party and Komsomol organizations. For this reason, the communists and the Komsomol activists should not overlook the changes in the mood of each aviator. It is essential to constantly delve into the needs and requests of the men, provide help to the commander in improving everyday life and in organizing the leisure of the personnel, and to respond promptly to any abnormalities which can introduce confusion in the precise rhythm of military life and training.

For example, truly regulation discipline and order have been established in the unit under the command of the first-class pilot, Col A. Kryuk. The squadrons are close-knit, friendly military collectives where each man precisely knows the tasks of the subunit and accurately performs his duties. All political indoctrination is carried out in accord with the requirements of the documents which regulate flight service and military activities. In the subunits a situation has been created of intolerance for any manifestations of laxness, disorganization or infractions which directly or indirectly can have a negative impact upon combat readiness.

The regimental commander is a master of flying and a good pedagogue. His every order is thought out, purposeful and well reasoned. Col A. Kryuk shows the highest exactingness and demandingness on the conduct of himself and his subordinates. At the same time he can often be seen in the barracks and the parking areas talking with the officers, soldiers and sergeants on the most diverse subjects. And the men gravitate toward the commander, knowing that they will always find understanding and support from him.

Communist Kryuk demands the same attitude from his deputies and squadron commanders, for he is convinced that only in being among the mass of the soldiers can one know with absolute accuracy the state of affairs in the military collectives, the level of discipline and the moral-political conditioning of the personnel.

The commander carries out all his decisions, instruction, orders and control over their execution either personally or through the staff. For this reason, the most serious attention is given to the selection of staff personnel, to the clear organization of its services, and to observing the proper standards in the relationships of the officers, the rank-and-file and the sergeants.

The staff has three main functions: planning, organization and control. Each of these does not tolerate formalism and oversimplification. The role of a unit or subunit commander is generally recognized. However, the approach to leadership over staff activities has its particular features. As an example, take the working out of the military and political training plans. Naturally, the plan is set for the training year for the units in terms of missions, accrued flying time, and so forth. Hours are also assigned to ground training. Seemingly nothing would be simpler than to divide the annual plan by the months, by the days of the week, and draw up a schedule, and then there merely remains the supervising of its execution. The same thing holds true for the planning tables and the other schedules which determine the regimen of the unit's life.... But in fact, this work demands a thoughtful attitude, and I would say, a scientific approach. A multiplicity of specific factors influences the planning of military and political training. For this reason, the ability of a commander, along with the staff, to ensure maximum stability in carrying out the plans assumes decisive significance in establishing a professional atmosphere in the collective. Moreover, the precise work of the staff has a decisive impact on the strengthening of discipline in all the subunits, and on the close interaction of the various services. All of this, taken together, ensures a steady work pace and high quality and efficiency in the air skills of the fliers and the special training of the engineer and technical personnel.

We have already mentioned time discipline. At first glance, seemingly nothing has changed in the organizational activities of the staffs. The basic areas of work are the same: military, political, special and physical training. But is this the case? During the postwar years, the contingent of personnel has changed. The educational level of the pilots and navigators, the engineers and technicians and the specialists of various services has risen significantly. The third-generation aircraft and their weapons place higher demands upon their operation and servicing. Each year certain new questions and problems arise which concern the training level of the personnel and the combat readiness of the subunits, and which require time for solving them. At the same time, the number of studied subjects has increased, the training programs have become more profound and fuller. But there is no more time. Where is the solution?

First of all it must not be forgotten that the effectiveness of training hours rises where service and studies are organized in strict accord with the requirements of the regulations, and where the commanders and their staffs maintain firm military order, thereby excluding the wasting of time and all sorts of hesitations. The basic indicator for the effectiveness of the work carried out by the commanders and staffs in the careful use of time resources is the quality of the exercises. Here it is wise to recall that time discipline also presupposes clarity in the organization and execution of exercises, the saturating of each hour of them, the unswerving observance of the daily regimen, the distribution of the groups in the auditoriums of the training facilities, and strict accounting of the studying and mastery of the subjects by the personnel. The last is particularly important, as because of poor accounting there often is an unjustified repetition of already

studied questions, and consequently, training time is wasted. It is essential to organize the exercises in the classrooms, laboratories, the trainers and airfields in such a manner that there be a maximum return from them and that each sortie is actually schooling in combat advancement.

In order that this becomes a standard of life, it is essential to reach a situation when the staff becomes a small but effective scientific research center to study experience and improve the troop training and indoctrination methods. That is, there must be systematic and effective propagandizing of the advanced methods for organizing and conducting exercises. Here the staff should set the tone. And this is completely justifiable, since the most skilled specialists are concentrated precisely in them. A close tie between commander training and better educational methods precisely can give a tangible effect in improving the quality of the entire training process, and ultimately this is one of the tasks in strengthening proper order and discipline. Thus, there must be a profoundly thought-out system for the commander training of the officers who accordingly are to conduct various exercises. Here a profound knowledge of Marxist-Leninist methodology and an understanding of our party's policy in military organizational development are indispensable.

Control over execution holds a special place in the strengthening of proper order and discipline. Here the role of the staff is of primary importance. The prompt and sharp response to the slightest deviations from the requirements of the regulations always anticipates and, hence, prevents an infraction of military discipline, internal order, and ultimately, a flight accident caused by the personnel.

Every person realizes that the person who draws up the plans and organizes military and political training also bears full responsibility for this. And so the commanders, political workers and the chiefs of staff must constantly make certain that the plans approved by them are carried out.

But, unfortunately, there still are instances when individual commanders, having approved plans and decisions or having issued an instruction or given an order, consider their mission virtually complete. The checks are carried out formally, without going into the essence of the problem, and without having studied the personal and professional qualities of subordinates. Moreover, statements can be heard such as: supposedly the main thing for an aviation unit is flight training, and all the rest can come later. On the one hand, this is correct. The state of the combat readiness of a subunit or unit is determined from the level of the flying, firing and tactical skills of the air fighters. On the other hand, it is scarcely possible to attain stable successes in military and political training, without having raised discipline and order to the proper height. More accurately, where organization and discipline are weak, there are more often lags behind the flight training plan and more violations of the flight service laws.

For example, it is possible to some degree to judge the state of affairs in a regiment from how the unit observes proper order, and how the service quarters, the training facilities and the airfield facilities are maintained. During an inspection of the unit commanded by Lt Col V. Nadrechnyy, one was struck first of all by the lack of elementary order in this entire complicated military system. In a majority of the quarters and even in the staff, things were in disarray, and they had not been provided with firefighting safety equipment. The appearance of certain servicemen was sloppy, and the uniform rules were not observed. The commander and

the chief of staff had abandoned control over the services for the troops, and this is an organic inseparable part of all military service. In the garrison there were many other infractions of discipline and order, and the commandant and his service who legally should watch over order were not carrying out their duties.

As a result all these oversights and failings were extended to the airfield and had a direct impact on combat readiness and flight safety. Suffice it to say that during the previous year the unit had committed several potential air accidents which could be blamed both on the technical and flight personnel. Here one can see a clear dialectical link: where indoctrinal work with the personnel is carried out poorly, it is possible to have oversights and violations of the flight service laws. Moreover, the discipline of subordinates depends directly upon the discipline of commanders.

The Decree of the CPSU Central Committee "On Further Improving Ideological and Political Indoctrination Work" teaches the commanders, the political workers, the party and Komsomol organizations how to raise the ideological and theoretical level of the training process, to strengthen its ideological focus, and to ensure a unity of political, moral, military and labor indoctrination of the aviators. This is not easy work and requires great, intense labor by all categories of indoctrinators.

The effectiveness of combat training and its even pace are inseparably tied to a further improvement in the organization of the socialist competition, and to using its mobilizing and indoctrinating role. In the consistent and purposeful struggle to strengthen organization, discipline and firm proper order, the characters of the men are forged, their fighting qualities are shaped, and there is a constant rise in professional skill and a readiness at any time with weapons in hand to come to the defense of their socialist fatherland.

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## CLOSER ATTENTION TO FLIGHT MAINTENANCE PROCEDURES DEMANDED

Moscow AVIATSIYA I KOSMONAVTIKA in Russian No 3, 1980 pp 4-5

[Article by Lt Col V. Ivanov, Military Pilot 1st Class: "Without Insidious Incidents"]

[Text] The day was not far off when the officer candidates of the flight schools would go to the airfields and begin the practical mastery of combat aviation equipment. The commanders and political workers, the teachers and flight instructors were confronted with great and intense work. And it was not merely a question of reinforcing the theoretical knowledge obtained by the officer candidates, or developing the skills of handling cockpit equipment and the aircraft controls. It must not be forgotten that in teaching the young people, it is essential to painstakingly and steadily, day in and day out, instill in them a love for the flying profession, to shape a communist ideology, and develop a feeling of high responsibility for the assigned job.

We feel that only such an approach makes it possible to successfully solve the problem of comprehensive instruction and indoctrination, and to instill in the future officers a taste for army service and a feeling of a realized necessity to carry out the instructions and orders of the commanders.

Precisely a comprehensive approach to training and indoctrinating the officer candidates teaches them to be precise, collected and efficient. As experience indicates, the slightest oversights in pedagogical work subsequently can reappear in the most unexpected situation.

...The crew headed by the military flight instructor 1st class, Capt. A. Kupriyanov, was taking off for practice bombing. The bomber headed precisely on the combat course at the designated time. The squadron navigator, Capt. V. Bashkov, was hunched over the sight. However the target could not be seen.

A report went out to the control tower. Permission was received for a second pass. The result was the same. The flight controller at the range, having received the message of the crew that the sight had failed, ordered it to return home.

At the airfield the flights were interrupted. The controller sent the firefighting equipment and an ambulance to the runway. One never knows what can happen when landing with bombs. But the crew commander landed the aircraft gently, without complications.

But the question of the sight failure remained open. In truth, the technical aspect was clear. The cable controlling the mirror of the sighting angles had slipped off its guide rollers. The specialists quickly eliminated the failure. But why did the sight fail? The tightening of the cable had been adjusted strictly according to the rules.

As was shown by an investigation of the potential accident, the specialists had prepared the aircraft sight equipment fully for the sortie, but the navigator had not checked the correct working order of the equipment, the mechanisms and units which he would use in the flight. In other words, the officials had not carried out the requirements of the documents regulating flight service. And in no way can it be excluded that at one time, in teaching these aviators efficiency, their mentors, as they say, overlooked something, and the present commanders relaxed control over their flight preparations. And the instructor personnel was carrying out the flight mission. It is extremely important that they who have been entrusted with the training and indoctrination of officer candidates, understand and feel all the responsibility for the fate of their students.

Unfortunately, inefficiency has various interpretations. Individual servicemen at times feel that the so-called minor oversights do not influence the safe outcome of a flight, and for this reason, in making a note in the column of the corresponding log, conceal their failures. At the same time, carelessness or the replacing of true work by the appearance of it directly jeopardize flight safety. An unconscientious executor endeavors to give a mass of arguments for his self-justification. He, as a rule, is carrying out a mission below his capabilities, but on the other hand reports promptly. It does happen that certain commanders having lessened control over the quality of the work being done, give way to illusions of well being, and as a result a negligent worker is placed in the same category as the efficient and punctilious.

I remember a case in the wintertime. It was a severe frost, and there was also wind. However, the flights were being carried out strictly according to the planning table. At the designated time, the fuel trucks rolled up to the aircraft, and having taken on fuel, they again returned to the skies. But then, having studied a fuel sample from the next tanker, the senior flight engineer, Engr-Capt V. Vasil'yev, ordered it "held up." Ice crystals had been discovered in the kerosene. After a report to the flight controller, all the fuel trucks were inspected. Crystals were discovered in one other. This had not occurred before.

Was this a random oversight or the consequence of failures by officials in the fuel and lubricant service?

In a check it turned out that certain officers and warrant officers ("praporshchik") in this service had gradually let demands slide and had lost their professional vigilance. And only a conscientious and scrupulous attitude toward his duties permitted the duty engineer to prevent possible unpleasantnesses in the air.

Experience shows that the most effective means for combating inefficiency is systematic supervision by superiors over the activities of their subordinates. And not excessive intervention or formal checks but rather daily control, and profound penetration into the essence of the questions being solved. Of course, the providing of immediate aid when necessary is essential. In other words, if a superior at

any time precisely establishes the true state of affairs in his system, as well as the mood and attitude of his every subordinate to labor, then by this he puts up a tangible barrier to inefficiency, with all its consequences.

Here there is nothing new, but obviously we must take this up because where inefficiency appears, inevitably formalism, indifference and complacency arise. It is difficult to guess what the consequences might be, but in any instance the damage can be very tangible. It seems to me that an inefficient aviator is the potential cause of an air accident, and particular exactingness must be placed on such men.

Each aviator knows that the quality and depth of analyzing the weather situation help the commander in taking a correct decisions for the flights, and for their continuation or aborting. In other words, the effective and intelligent processing of weather information by the duty weatherman and its prompt transmission to the command directly influence flight safety.

Certainly, the lack of discipline in the officers of this specialty can create definite conditions for interrupting the rhythm of a flight day, for violating the planning table, all sorts of delays and even potential flight accidents.

Unfortunately, it happens that individual officers do not understand all the importance of promptly transmitting weather information in the established procedure. For example, Capt Tech Serv A. Kerk and Lt Tech Serv V. Agapov were repeatedly late in transmitting the weather summaries to the school command. However, we were concerned not so much by the very fact of the violation of the procedure as the attitude of the aviators to their duties. They did not see anything blameworthy in their conduct and endeavored to justify themselves by the fact that there had been a lot of time before the flights.

In my view, such instances can be explained only by carelessness. The guiding documents precisely and strictly regulate the actions of officials, and any deviations from their requirements are simply inadmissible in flight practice. One of the main tasks in indoctrinating future fliers is precisely to make certain that the scrupulous execution of the laws of flying become an inexorable rule in all their lives.

All these instances occurred in an aviation school with officers who should have been an example of the scrupulous execution of service duty. This forced the command and the political department to largely revise the methods for indoctrinating the indoctrinators.

Although a good deal has been done since, there is still much to do. Particularly in indoctrinating in all categories of servicemen a high feeling of responsibility for everything that concerns the preparation of aviation equipment, the crews and flight support.

In the aviation schools, the bases are established not only for the professional knowledge of future officers. Here they acquire the habits of the army way of life, discipline and precise efficiency. Many years of experience in a flight school has given me grounds to say that the officer candidates who have shown themselves to be efficient, disciplined and conscientious in the units serve as officers with honor.

Several years ago, Officer Candidate V. Frolov, as one of the best graduates, was offered a chance to remain at the school as a flight instructor. The years passed. Senior comrades and commanders speak of Frolov as an efficient, disciplined officer, an able indoctrinator of subordinates, and an excellent flight instructor. The officer candidates of his group are among the first to solo and only with good results. Communist Frolov is involved in extensive social work, and for the third year has headed the squadron Komsomol organization.

Having become more closely acquainted with the officer's method of work, one is convinced that he owes his success to the qualities instilled in him in school, and above all his efficiency and serious and conscientious attitude toward any order or assignment. He works strictly according to a plan and carries out everything that he has started. Before explaining or demonstrating anything to the officer candidates on a trainer, model or in the air, the instructor establishes how they have mastered the question, he finds the true reasons for mistakes, and after this works out a precise procedural model for teaching the given exercise.

The best preventive measures in the struggle against inefficiency is the indoctrinating of the future officers in total loyalty to their profession, honesty, justice, and responsibility to their comrades and arms and to the motherland for its security. Unfortunately, it still happens that in certifying an officer candidate, they use as the basis his grades for the studied subjects, but close their eyes to violations of discipline which are not considered major. And precisely from these "minor points" the germ of inefficiency begins to grow in the character of the officer candidate.

In this regard, of interest are the comments from the units about the graduates. One is struck by the fact that there are more positive responses where the indoctrinational work is of a comprehensive nature. For this reason, at present, we pay the most serious attention to an analysis of such comments. Undoubtedly this question requires great patience and tenacity, but on the other hand it is paid back in the high quality of graduate training. And the level of instruction and indoctrination work is raised.

In our school we have Lenin Scholarship winners and winners of the Prize imeni Yu. A. Gagarin. Sr Sgt A. Alekseyev has set a good example in service and studies. He is always smart, neat and punctual. This has won him irreproachable authority among his fellow servicemen. Appointed to the position of assistant platoon leader, he has done a great deal to unite the collective, and has organized sports activities. By the end of last year, the platoon honorably carried out the assumed obligation of becoming outstanding. The young communist A. Alekseyev has been a good assistant to the commander.

This example substantiates what positive results can be achieved by serious indoctrination of the commanders and instructors.

It must also be pointed out that among efficient officers, regardless of the position they hold or regardless of the range of questions they must settle, there are never failures caused by them. I could mention the commander of the outstanding squadron, military pilot 1st class, Lt Col I. Umanets. He is a principled, efficient, demanding and just commander. In his squadron for many years now there have not been any flight accidents. And when military pilot 1st class, Lt Col V. Leychuk,

is in control of the flights, one can be certain that nothing will escape his sharp glance and attention. The officer candidates feel confident in hearing his voice in the headset.

The commanders and political workers, the faculty and the instructor personnel of our school pay a great deal of attention to indoctrinating in the future fliers high moral-political, psychological and military qualities, among which one of the leading places is held by the unquestioned and precise execution of orders. And this is understandable. Where efficiency has been carried to the highest limit, there are no insidious "instances," and the flight missions are carried out precisely, effectively and on time.

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## PROFESSIONAL GROWTH OF ACE PILOT DESCRIBED

Moscow AVIATSIYA I KOSMONAVTIKA in Russian No 3, 1980 pp 6-7

[Article by Capt A. Podolyan: "In the Vortex of the Attack"]

[Text] The predawn silence was broken by the piercing sound of a bell. Aleksandr Golyandrin got up quickly and began dressing. A minute later he was already out on the street. The "assembly" signal had already rung in the garrison, and the entry doors here and there were banging as the aviators hurried to their jobs.

In the flight hut, the regimental commander explained the tactical situation to the fliers.

"Our basic mission," he said in conclusion, "is to destroy the crossing over the river and to provide cover for the troop change of position in the southern sector. The attack against the crossing is at 0830 hours. The first four-plane element will be headed by Maj Golyandrin and the second by Lt Col Samoylov. Realize that in the target area there is strong air defense, and the air space can be viewed from almost zero to the ceiling. Tentatively the antiaircraft complexes are located here...," said the commander pointing to a map. "After the mission land at your airfield. Any questions?"

Guards Maj Golyandrin leaned over the chart. It was almost impossible to approach the target without being spotted as the terrain was flat. Only in the east were there low hills.

"But why not use this? Probably the 'enemy' knows that here lies the weak point in its defense and will endeavor to keep this sector under constant control. But if we work quickly.... Some thought must be given to this."

The officer took his notebook and busied himself with calculations.

The flight was in the air precisely on time. The course was toward the area of forthcoming actions. The aircraft were in a tight battle formation. Now they could be seen on the screens of the "enemy" radars as just a single blip. This circumstance underlay the plan of the assault group commander, Guards Maj A. Golyandrin.

The characteristic bend in the river glistened under the wing, and it was a minute of flight from the river to the hills. It was time!

"Descent," commanded the leader.

In the tight formation, the flight descended to a low altitude. Protected from the radar eyes by the hills, the blip on the radar screens should disappear. And at this moment, there came the command to the outside wingman:

"Maneuver!"

The aircraft separated from the group and rapidly climbed to the former course. Now the radars should again see the target blip. As was discovered later, the "enemy" decided that there had been a brief loss of contact with the target.

And Golyandrin's three, having increased their speed, began turning, skirting the hilly ridge. Now everything depended upon the precision and teamwork in the fighters' actions. Time was short. The attack had to be made before the approach of the fourth aircraft from the group to the edge of the kill zone of the "enemy" SAM complex.

At an enormous speed, the fighters rushed over the earth. The reference marker flashed abeam. Golyandrin glanced over the instruments, and over the airwaves came the command:

"We are attacking!"

And as if in affirmation of the correctness of the calculations, the wingman heard the report from the fourth flier:

"I am turning off."

This meant that he had reached the boundary of the kill zone and turning energetically, dropped down to the previously agreed upon area.

Guards Maj Golyandrin put the aircraft into a climb. The wingman followed him closely. At the upper point of the maneuver, the three planes broke the flight trajectory and dashed toward the ground. They could clearly see the river, the pontoon bridge and the column of vehicles on it. "We have succeeded!" flashed the thought, and at the next instant Golyandrin, lining up the center of the bridge in the hair of the sight, pressed the firing button. All of this was in precise accord with the model worked through on the ground. The daring tactical move of the fighters had succeeded.

Having executed the antiair defense maneuver, the three disappeared over the horizon. The fourth aircraft joined the group at the agreed upon area, and the full flight returned to the airfield. The monitoring materials affirmed the accuracy of the attack.

The silence was broken again and again by the roar of the afterburners. Fighters were leaving on a mission. The exercise continued the entire day, and only toward evening did the intensity decline.

In the instrument monitoring classroom, Golyandrin prepared data for briefing the regimental commander on the combat work of the flight personnel in the exercise.

The results were excellent, however there was the disconcerting thing that certain pilots did not execute the maneuvers with sufficient energy, and did not make full use of the fighter's capabilities. In the notebook there appeared the entry: "Tomorrow repeat the exercises with the officers on tactics and combat maneuvering." The officer noted the outstanding men, and put their results in a separate table. Having completed the preparation of the materials, he headed home.

Evening was coming over the airfield. And although he could feel the fatigue, Aleksandr Nikiforovich walked lightly and freely, with the feeling of a person who has carried out his duty well. From the results of today's work, he was again certain that his efforts had not been in vain. His heart was filled with joy for the successes of his subordinates and pride for his profession. How quickly time flies! Was it not a long time ago that he himself took his first steps in flying? And now he had been entrusted with the instructing of others.

Aleksandr Golyandrin had dreamed about aviation since his childhood. When he completed his schooling, he did not have to choose his profession as the decision had been made. He would only fly. He passed the aviation medical board and all the exams were successfully taken. He became an officer candidate at the Order of Lenin and Red Banner Kachinskiy Higher Military Aviation Pilots School imeni A. F. Myasnikov.

From the very beginning of his studies he realized that without knowledge he would not get his wings. And for this reason he studied with all seriousness.

He had his bosom friend Aleksandr Zabolotnyy. Together they dreamed of flying, but his friend was admitted to the fighter-bomber school. The friends frequently corresponded, they shared their impressions, their successes and disappointments, and told of their new comrades and instructors. But behind the lines of each letter you could feel a tacit competition which helped both in competition.

"I have always been lucky with my friends," says Guards Maj Golyandrin. "In school the flying group was a strong one: Mikhail Arsen'yev, Viktor Fedorenko, and Mikhail Pyataev. We lived like brothers. We all had one desire, that is, to fly."

The indefatigable energy of the young aviators was skillfully directed by their instructor, Gennadiy Anatol'yevich Mukhachev. He inspired his students and instilled a love for flying, and was for them an example not only in military service but also in daily life. And in the combat regiment, the instruction of Lt Golyandrin was continued by Victor Nikolayevich Prokudin. An experienced flier and skillful educator, he passed on his knowledge to his subordinates, and made true air fighters from them.

In the unit Aleksandr plunged into his work. There were flights for convoluted maneuvers, for air combat and to the range under visual and instrument weather conditions. The missions gradually became more complicated. And this required even deeper knowledge. Sparing no effort, Golyandrin prepared for flights, he flew a great deal on the trainer, and studied the special literature and aids. Time passed. On Aleksandr's chest there first appeared the insignia of a pilot 3d class, then 2d, and finally 1st.

The USSR Minister of Defense was present at one of the exercises in which Aleksandr Golyandrin participated. He had high praise for the training of the pilot, and presented him with a watch.

Soon thereafter Aleksandr Nikiforovich achieved the highest flying skill, and became a sniper pilot.

He never keeps secrets from his comrades. All that he knows and all that he has mastered he generously shares with fellow servicemen. And he also does not conceal his failures. Having analyzed his actions in detail, he describes to others what must and what must not be done.

Once, while still a lieutenant, after completing an interception, he operated the radio compass incorrectly. As a result he almost landed at a different airfield. He described all of this honestly to the regimental commander. This occasion was also very instructive for the other pilots.

Honesty and a self-critical assessment of his training are a distinguishing feature of Guards Maj Golyandrin.

"If I have made a mistake, analyze it, find the sources, and tell others about it. Your authority doesn't suffer from this," he is fond of repeating.

Thus, once, in making a bombing flight, Capt Golyandrin committed an error. At the peak point of a maneuver he forgot to adjust the engine speed and put the aircraft into a dive at a low altitude with a maximum acceleration. Only cool-headed and precise actions in pulling out prevented a flight accident. After the flight the captain for a long time reflected on what had happened, and then drew the conclusion which became a law for him: prepare thoroughly for any flight, think through and play out in the cockpit each operation regardless of how many times you have flown the same exercise.

Having decoded the materials of the instrument monitoring, he described his actions in detail to the fliers, and showed on the film where, at what moments he had operated the controls incorrectly, and what could have happened. The lesson was a great benefit for everyone.

Dedication and love for his profession, principledness and exactingness are harmoniously combined in the character of the regimental chief of gunnery and tactical training, sniper pilot A. Golyandrin. He is constantly on the search. Never to be content with the achieved level is a basic principle in his work. Happy and outward going, communist Golyandrin becomes severe and inflexible if it is a question of shortcomings in flying.

...Aneksandr Nikiforovich looked at the night sky, and out of custom judged the weather and walked to the entry. Tomorrow was another work day with intense military training, the results of which would tell only in such days as today full of combat intensity. Who had achieved greater skill? Tomorrow the regimental commander would take this up in an analysis of the exercise.

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## EDUCATIONAL PRACTICES OF FLIGHT INSTRUCTOR TRACED

Moscow AVIATSIYA I KOSMONAVTIKA in Russian No 3, 1980 p 10

[Article by Lt Col (Res) A. Solov'yev: "He Always Remembered..."]

[Text] The bus was to leave for the airfield in a minute. The pilots were taking their seats.

"Comrade Captain," said the messenger to one of them, "there is a letter for you."

Capt Kozlov turned a thick envelope over in his hands. "From whom could this be?" he thought. "A surprisingly familiar handwriting. There was no return address, only an illegible signature."

"Someone really wrote you a letter, didn't they, Sergey Dmitriyevich?" said one of his fellow servicemen jokingly.

The pilot smiled but fell silent. Taking a seat by the window, he tore open the envelope.

"Dear Sergey Dmitriyevich, hello!" he read. "Your ex-student Lt Tolbayev is writing you. Do you still remember?"

And how? The instructor remembered a dark-completed, well-proportioned officer candidate with almond-shaped eyes. Would he remember? But how could he forget those with whom he had worked for a long time and with intensity, those he had taught to fly. Into each he had invested a particle of his soul.

"It seems very little time has passed," Koslov continued reading, "but over this period much has changed in my life. Very often I recall our close group. At the beginning of service it was difficult in the regiment, I will not conceal it, but the senior comrades helped and everything gradually straightened out. Now I have adjusted to the working pace and have mastered a new type of combat aircraft.

"Do you know, Sergey Dmitriyevich, that only here did I truly realize why you left us to work alone in preparing for the flights. At times we were even insulted as other instructors sat with their groups, any question was settled with their help quickly and understandably, but we had to dig out much ourselves. And you came to help only at the most difficult moments. And now we understand as you were teaching us independence. And rightly so. In the training unit, training has been

organized basically with independent work. For this reason, I have not experienced any difficulties, like some of my peers.

"I am successfully mastering the new aircraft. You probably remember my school-day anxieties, as I could not believe that I could fly an aircraft easily and freely. For some reason it seemed that the profession of a pilot was not for me but was the lot of the elite...."

The captain smiled, and glanced out through the slightly foggy bus window, and fell into thought. Yes, flights on a combat aircraft did not come easily to Officer Candidate Tolbayev. He was cautious with any new exercise, as if again and again he was testing his abilities. He asked many questions, even in those instances when he himself could have successfully found the answer. Sergey Dmitriyevich at that time had gained the impression that Tolbayev merely wanted to check the correctness of his judgments. This was disconcerting. The officer candidate was strong if he had mastered something it was once and for all, but then all of a sudden such hesitations. This could reflect on his further development.

In the air Tolbayev did not always rationally allocate his attention, at times his response to deviations from the flight conditions was slow, although he spotted the errors and corrected them intelligently.

The main thing is patience, Capt Kozlov decided then. And no matter how angered he was by the elementary mistakes of the officer candidate, he never was sharp or insulting with him. "Certainly the trainee is not to blame that it is hard to master the program. This is a personality trait," thought the instructor. "Hence he needs a special approach and different training methods." In reflecting, Kozlov sought them out and before taking the decision thought it over thoroughly.

"Do you know what helped me then, Sergey Dmitriyevich?" the captain smiled again in reading. "The analysis which you proposed that I do after each check-out flight. With your help I myself found the causes of errors. Myself! At such moments even my heart skipped a beat out of joy: it meant that the aircraft was not the problem, the entire question was me! If I made mistakes, consequently I could correct them. And then I believed in my capabilities. I recall our last check-out flight. Even on the ground you said that the analysis was an unique laboratory of quality. Sober self-criticism in assessing one's actions in the air is the guarantee for success, you taught. I have always remembered this."

Yes, during that flight Tolbayev was completely calm. He did not even need any hints. Regardless of a certain roughness in piloting techniques, the basic goal was achieved. The officer candidate had confidence in his own forces and was firmly gaining his wings.

"Later on, when training became a bit more even, I sometimes was amazed why you lowered the grade for certain assignments. Certainly they were carried out well. I soon realized that I could do better. You were right. Exactingness in assessing the executed flight disciplined us, and forced us to show a serious attitude even to the simplest elements. And this is very important now. A great thanks to you for this science, Sergey Dmitriyevich."

"And here is one pilot who grew up," thought Capt Kozlov, folding up the sheets of paper. "A good fellow, tenacious, something will come of him."

Again the principle had been affirmed which had been followed by the military flight instructor 1st class, communist, Capt Kozlov: to seek out new educational methods, to consider one's capabilities and the capabilities of subordinates. He scrupulously studied everything that the guiding documents recommended, and creatively introduced their requirements into training and indoctrination practices.

The experienced educator Kozlov started work with the officer candidates by establishing a trustful and professional contact. He always remembered that a graduate was already half a pilot and that you could not fly with him without employing all the maneuvering and combat capabilities of a missile-carrying aircraft. Dynamic maneuvers tempered the will, they developed boldness, confidence in the aircraft, and they caused the young aviator to critically assess his actions, and contributed to the development of tactical thinking.

It was impossible to instruct successfully without good relationships. A healthy psychological climate in a flight group helped to better know the trainees. And Kozlov made an effort for the officer candidates to know him more closely. He talked with them about various things, often far removed from flying. That is, the instructor shared with the young men not only his flying experience but also his experience in life. The officer and the officer candidates grew to understand one another. And as a result, the future fliers perceived the advice and demands of their mentor as their due.

Experience does not come all of a sudden. At the beginning Kozlov also had failings, but constant work with himself, and a thoughtful and serious attitude toward the problems of indoctrinating the flying youth helped him become one of the best educators in the unit. During the years of instructor work much had to be revised in himself as well. Certainly the flight instructor should teach the officer candidate not only to fly well, but also to profoundly feel personal responsibility for the defense of the motherland and understand his place in the winged combat formation. The art of an indoctrinator presupposes above all the ability to acutely feel the great demands upon oneself as a teacher, and to follow the best principles of Soviet military pedagogics. Many years of instructor experience had convinced Kozlov of this and also that firm ideological conditioning of an instructor, his political maturity, moral purity, and high flying skills are a vivid example for imitation directly influencing the quality and effectiveness of instruction as well as the shaping of the moral-political and professional sphere in the activities of the future flier.

The bus was already approaching the control tower when the roar of the afterburner could be heard. A sleek silver bird flashed over the concrete slabs and breaking the flight trajectory over the center of the runway, began to turn in a convoluted aerobatic loop. Everyone admired the agility with which the pilot inscribed each figure. Having executed a roll-over, the aircraft slipped toward the ground and headed into the third turn. After a few minutes it was taxiing toward the fueling area. The canopy opened, and a smiling pilot climbed out of the cockpit. With permission from the traffic controller, he had been working on maneuvers over the airfield.

Capt Kozlov noted with satisfaction that this was his recent graduate who had remained at the school as an instructor.

...In the sky red rockets burst announcing the end of the first flight shift. Kozlov watched them and then headed to the tower room.

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## PROBLEMS OF NIGHTTIME FLIGHT DISORIENTATION DISCUSSED

Moscow AVIATSIYA I KOSMONAVTIKA in Russian No 3, 1980 p 11

[Article by Maj A. Vasilets, Military Navigator 1st Class: "Attention: Sky!"]

[Text] Lt A. Ivanov for the first time was making a night flight in a zone. The lower cloud edge was 4,000 m, and the upper 6,000. The mission envisaged the executing of simple aerobatic figures beneath the clouds.

The flier had already flown during the day under instrument weather conditions and in relying on this experience, decided to go beyond the clouds. But in penetrating the clouds, above on the cockpit canopy window there appeared a shining oblique strip which the lieutenant assumed was an opening between the clouds. Suddenly the pilot felt the aircraft bank. He tried to level out the aircraft using the shining strip as a guide. However this did not help. He could not determine the position of the aircraft from the instruments.

And the sensation of a bank was growing stronger. Thus, fighting against himself, Ivanov lost his spatial orientation. When the aircraft emerged from the clouds, he, collecting all his strength of will, was able to bring it to level flight.

And one other case. Capt A. Klokov, after starting the engine, forgot to put on his oxygen mask. In climbing he felt a dryness in his mouth, but did not pay any attention to this. Gradually he began to be overcome by sleepiness and his movements became feeble. When finally the pilot put the aircraft into a descent, he felt better. Even the night seemed brighter, and a clearly observable horizon appeared which for some reason swayed and then drifted off and then began to spin.

By an enormous effort of will, the captain prevented losing conscience. He understood the reason for such a state, he put on the mask, and after several gulps of oxygen, the night "grew darker," and the false horizon disappeared. Using the instruments, Klokov determined the aircraft's position in space, and everything resumed its place.

What occurred during the flight with the men from the viewpoint of psychophysiology? Certain pilots consider the appearance of illusions to be a consequence of a pathological state of the organism and do not like to talk about them. At the same time, illusions can occur in any, completely healthy person, for, as psychologists assert, they are related to the fact that during flight with the natural horizon invisible, with the movements of the aircraft the vestibular apparatus perceives

the resulting G-load as the force of gravity. A lack of experience and at times an ignorance of the reasons for the occurrence of illusory sensations can cause in young aviators a feeling of their "incapacity." But the essence is that this is a phenomenon of a purely psychological property and can be eliminated by an effort of will, and by the ability to determine one's spatial position from the instruments.

A case comes to mind which was told me by the military pilot 1st class Lt Col F. Vasil'yev. He was to make a nighttime interception in the stratosphere. The situation was complicated by the fact that after taking off using his afterburner the pilot was to break through the clouds, the upper edge of which reached 10,000 m. Vasil'yev watched the instrument readings. In climbing, the parachute straps pressed on his shoulders and he felt as though he were flying upside down. It was a sensation as though his head was hanging down in an abyss. All attention was on the instruments, but the illusion did not go away. He even broke into a sweat. He was determined not to abandon the instrument readings. And ahead was still the interception. Vasil'yev had gotten into various situations during his flight practice, but this had never happened before. He forced himself to think that the ground was under his feet and the sky overhead. The situation became normal. He successfully carried out the attack on the target.

When the air controller gave the command: "Begin descent," again the positions of up and down were reversed. He had to mobilize his entire strength of will to combat these false sensations. However, nothing helped. At an altitude of 2,000 m, he put the aircraft into level flight. He began the glide and he had to descend. He moved the stick away from himself and it seemed that the aircraft continued flying without any change. The notion even flashed through his mind of catapulting out, if he did not see the ground before a safe altitude.

Instruments, only the instruments. At an altitude of around 500 m there suddenly opened up a panorama of a shining city, and the false sensations immediately disappeared as if there had never been this difficult struggle.

In no case should such instances be disregarded. Rather on the contrary, it is essential to seek advice from a physician or commander, to listen to their explanations and advice on what to do if false sensations arise in a flight, and to perfect the skills of instrument flight.

This was the first time that Lt Ivanov had encountered an illusion. And although the physician and experienced air fighters, in training the flight personnel for night flights, warned about the possible occurrence of such phenomenon and described how to combat them, the pilot did not give proper significance to this advice. Without having firm skills in instrument flying, he flew into a cloud and the result was not long in coming.

For Capt Klokov, the reason for the bad sensation was oxygen starvation. As the medics assert, in a state of so-called euphoria, it may seem to a person that everything is fine. The pilot found strength to determine the reason for his condition and to safely get out of a rather complicated situation. But certainly things could have gone worse.

Of course, mental stress, poor rest or a violating of preflight conditions contribute to the occurrence of distorted notions of the aircraft's position in space. However, each psychophysiological complication during a flight has its own specific causes.

Flying is complicated and with good reason had been regulated by the corresponding documents, each point of which contains the experience of many generations of aviators. A violation or deviation from the established rules inevitably leads to a potential flight accident.

Thus, the decision taken independently by a pilot to alter the mission, particularly under conditions which he is unprepared to meet, or an over-confidence in ones forces directly jeopardize flight safety and are rightly considered lack of discipline. An analogous evaluation must be given to a violation of the procedures for operating oxygen equipment.

During the flight of Lt Col Vasil'yev the illusion had a valid reason. Before the pilot got into the cockpit of the missile-carrying aircraft, he had spoken with his superior. The subject of the conversation did not involve the flight at all, but on the other hand it had a strong impact on his nerves. In entering the clouds, the pilot's conscience split into two: to controlling the aircraft by the instruments and to suppress the troublesome side thoughts related to the conversation.

The arising illusion put the air fighter in a very difficult situation. He had to collect all his strength of will and suppress the unnecessary manifestation of his own psyche. The pilot managed this task due to his experience.

However here one is struck by an essential detail. All sorts of instructions not related to the flights and particularly reprimands prior to a sortie, regardless of whether or not the pilot merited them, I feel, also represent an infraction of flying discipline just as those we have been describing, and can contribute to the development of a potential accident.

In the article "The Shining Halo" (AVIATSIYA I KOSMONAVTIKA, No 9, 1979), Lt Col V. Shishkin raised a very important question related to flight personnel activities. Here one can scarcely find disinterested persons. It is extremely important for every pilot and commander to know how his professional skills are growing, for what reasons errors occur and how they can be combated, as well as what influences the training process and how. Each element, even one only indirectly bearing on flying, must be approached seriously and thoughtfully, and the laws of flight service must be carried out without question. This is the main guarantee for successful flight development and professional maturity.

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## GREATER ROLE FOR VOLUNTEER MILITARY PROPAGANDISTS URGED

Moscow AVIATSIYA I KOSMONAVTIKA in Russian No 3, 1980 pp 12-13

[Article by Lt Col S. Pokrovskiy: "Upon the Challenge of the Flier-Propagandists"]

[Text] Propaganda and mass agitation work serves as a powerful means of ideological influence on the aviators and for developing in them high moral-political and psychological qualities essential for air fighters and the defenders of the motherland. At the same time to master the art of propaganda is not an easy matter, and requires both constant work by the propagandist himself as well as serious attention to his education and training by the commanders and party organizations. Where constant attention is paid to this, the effectiveness of agitation and propaganda work is higher.

As proof of this I would refer to the experience of the agitation and propaganda group in the aviation unit where Maj M. Markevich is the party organization secretary. In carrying out the decisions of the 25th Party Congress and the demands of the Decree of the CPSU Central Committee "On Further Improving Ideological and Political Indoctrination Work," the communists have given a number of interesting lectures and reports to the aviators, in achieving a high impact on the personnel.

The non-T/O lecturers propagandize the standards of communist morality and the Soviet way of life, and explain the requirements of our laws, the military oath and the military regulations.

It would not be an exaggeration to say that the dissatisfaction of the aviators in the achieved results in combat training and their desire to improve their professional skills are the result of the activities carried out by the non-T/O propagandists.

As a rule, the agitpropgroup [agitation and propaganda group] includes officers who are well trained in theoretical and pedagogical terms and who know the situation in the subunits. For this reason their speeches evoke in the aviators a desire to work even better, and force them to seek out reserves for a further rise in combat readiness and for strengthening order and organization. Many good words can be heard about the propagandists officers N. Fedorchenco, V. Petronis, N. Makhnev, and others. Their profoundly informative speeches are always received with great interest by the listeners.

In the practical work of the party organization, a strong place is held by the reports of the agitpropgroup members on the raising of their ideological level and improvement of pedagogical skills. Moreover, the questions of the Marxist-Leninist training of the officers and the mastery of the training programs, the recommended works of V. I. Lenin and other primary sources are regularly discussed at the party meetings and sessions of the party bureaus. For example, at one of the sessions of the squadron party bureau, the communists listened to the flight commander, Capt G. Tsibulya, on what contribution he had made as a non-T/O propagandist to indoctrinating in the young fliers high moral-political, military and psychological qualities.

The party activists with reason were interested in this question. They knew that the communist leader was rather well prepared, but pointed out that his indoctrinal impact on the lieutenants left much to be desired. Otherwise how could one explain the appearance of the starts of conceit and complacency among certain young fliers.

The conversation at the party bureau session was serious and specific. Tsibulya recognized his errors. But the bureau members were not satisfied by this. They instructed the officer to give a lecture to the young squadron fliers. The activists helped him prepare interesting material and to select facts on the development of the lieutenants and their professional growth.

The lecture turned out interesting, convincing, and full of good examples not only from the personal indoctrinal practices of communist Tsibulya, but also of other flight commanders.

The members of the agitpropgroup present at the lecture later on voiced their opinions on improving the quality of the propagandist's speeches and on raising their effectiveness. Tsibulya considered these opinions of his comrades in his further work.

The benefit was a dual one. On the one hand, the pedagogical skills of the non-T/O propagandist were increased. On the other, as a leader, Tsibulya took a new look at his relationships with his subordinates. He began to speak more often with the lieutenants, to go more deeply into their needs and concerns, and hence have a greater influence on their professional training.

The questions of a comprehensive approach to indoctrinal work in accord with the instructions of the 25th CPSU Congress hold a central place in the activities of the unit communists. For example, the party organization of the squadron which is under the command of military pilot 1st class, Lt N. Zaborovskiy, has carried out diverse work in the area of the ideological conditioning of the flight and engineer-technical personnel.

The commander, his deputies and the party bureau secretary take an active part in the ideological and political-indoctrinal work, they often give lectures and reports, and each such speech is closely tied to the tasks being carried out by the squadron. The visual agitation materials take up the experience of the best fliers and technicians who are carrying out their duty to the motherland in an exemplary manner. Along with this, particular attention in the squadron is given to the Marxist-Leninist education of the officers and to the quality of political training for the warrant officers ["praporshchik"], soldiers and sergeants. In the subunit

the communists and Komsomol members in fact are the active proponents of party policy. For a long time the subunit has led in the socialist competition and rightly carries the high title of outstanding.

In carrying out the requirements of the Decree of the CPSU Central Committee "On Further Improving Ideological and Political Indoctrination Work," the party organizations are also doing a good deal to propagandize the glorious heroic traditions of the Air Force. For example, there was an interesting meeting of the aviators with veterans from the formation. Speaking before the men were the participants of the Great Patriotic War, Hero of the Soviet Union, Mar Avn I. Pst'igo, reserve officers and twice Heroes of the Soviet Union I. Vorob'yev and M. Gareyev, and others.

The meeting with the veterans developed into a true holiday. The young fliers and the experienced experts of aerial combat assured the senior comrades that by their military efforts they would add to the glorious military traditions of the front-line men, and in the future would improve their flying skills and military expertise.

In endeavoring to improve professionalism and the concreteness of propaganda and mass agitation work, our commanders and political workers and the party organizations have not lessened attention to the selection and placement of the non-T/O propaganda activists. Many non-T/O propagandists are right-flankers in the socialist competition. In speaking to the aviators, by their words and personal example they challenge them to achieve new successes in military and political training.

In the squadron under the command of military pilot 1st class Maj A. Azhmyakov, the members of the agitpropgroup are constantly helped in improving lecture skills, the experience of agitation work is exchanged, and the methods of the advanced lecturers are propagandized. Thus, military pilot 2d class, Sr Lt V. Yegorov, proved himself to be an active propagandist. His speeches are always interesting, and the political exercise group which he leads for a long time has been outstanding. The party activists have disseminated his experience and have made it available to each member of the agitpropgroup.

To help the non-T/O propagandists, the communists have organized a permanent reference and information center at the officer club, and here it is possible to obtain exhaustive answers to the questions of the domestic political and international activities of the CPSU and the Soviet government. Reader conferences, movie lecture series, reviews and discussions of new books are held regularly.

All of this undoubtedly has a positive effect on improving the propaganda skills of the agitpropgroup members, and opens up broad opportunities for a further rise in the quality and effectiveness of ideological work.

During the present year, the year of the 110th anniversary of the birthday of V. I. Lenin and the 35th anniversary of the victory in the Great Patriotic War, the communists and the propaganda activists are confronted by great and difficult tasks. They require well thought out organizational work aimed at the communist indoctrination of the personnel and at achieving high indicators in military and political training.

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## NEED FOR CLOSER INDIVIDUAL INDOCTRINATION EMPHASIZED

Moscow AVIATSIYA I KOSMONAVTIKA in Russian No 3, 1980 pp 14-15

[Article by Capt V. Godilenko, Deputy Squadron Commander for Political Affairs: "Heart To Heart"]

[Text] As is known, success in flying comes from steady, collective labor. At the same time, an important and increasing role is played by each individual aviator. The achieving of the ultimate goal depends on his readiness to effectively carry out any mission, and upon his ability in a difficult situation to act decisively, with initiative, and in strict accord with the requirements of the documents regulating safe flying.

In the party organization of the squadron where military pilot 1st class, Maj N. Makogonenko, is the commander, individual indoctrination is in first place. And we feel to a good degree this has contributed to the successful carrying out of the military and political training plans and to safe operations on the ground and in the air.

At first not everything went smoothly for Sr Lt Tech Serv V. Nakoryakov. Regardless of the fact that he worked a great deal and took things to heart, in the maintenance group which he led there were infractions of military discipline and sometimes the aviators made mistakes.

The secretary of the squadron party bureau, military pilot 1st class, Capt A. Barbin, in taking a close look at Nakoryakov's work saw that he worked industriously, however there was not the proper return. And as proof of this, there was the potential flight accident which occurred due to the fault of the specialists in the aviation equipment group.

"Possibly the chief of the maintenance group is unable to lead the men," proposed Maj Makogonenko.

But the party bureau secretary had a different opinion. He was able to convince the commander that Nakoryakov could put the collective in order. It was merely necessary to help the communist.

Together they decided first of all to have a frank talk with him on how to eliminate the shortcomings more quickly and effectively. Capt Barbin asked the deputy squadron commander for the IAS [Aviation Engineer Service], Engr-Maj Yu. Khiudnev,

to make a detailed analysis of Nakoryakov's activities. The party bureau member, military pilot 1st class, Capt V. Chinyayev, and Sr Lt Tech Serv N. Zubarev, upon the recommendation of the commander, carefully examined the state of affairs in the maintenance group and studied Nakoryakov's work style.

The party bureau secretary attended the exercises conducted by the chief of the group, he participated in the mass political measures on his day off, and spoke with the sergeants and soldiers. He learned the strong and weak points of the military collective, and became more closely acquainted with how the commander trained and indoctrinated subordinates. All of this made it possible for Capt Barbin and the remaining party bureau members to delve more deeply into the life of the subunit, to better study the personal qualities of its leader and determine beforehand the range of questions which must be discussed with the group chief.

In a talk with Nakoryakov, the party bureau secretary analyzed in detail the shortcomings in his work and the reasons for their occurrence. In particular, he pointed out that at times the officer had endeavored to take over for the aviation specialists in the flights, to do everything himself, and did not rely sufficiently on the Komsomol members in the training and indoctrination of the aviators. In organizing the socialist competition, he made little use of the advanced experience for educational purposes. Capt Barbin advised him to look more closely at the work of the experienced group chiefs, to borrow the best from them, to more often seek help and advice from service comrades, and be able to encourage a subordinate, and, when necessary, be strict with him. The party bureau secretary described in detail to Nakoryakov how the advanced commanders in their work rely on the party and Komsomol organizations and advised him to maintain a closer contact with them.

"For example, take Capt Chinyayev," he said with enthusiasm. "On the evening before the flights, the flight commander, regardless of being very busy, always finds time to have a sincere talk with each technician and junior aviation specialist of the flight, he shows an interest in their affairs, and is able to arouse their desire to do excellent work.

The frank and principled talk made its mark. It caused Nakoryakov to self-critically assess his failings and to take measures to eradicate the shortcomings in flight maintenance and to improve the microclimate in the collective. Time passed and the squadron commander noticed that the quality of flight maintenance by the specialists in the group had risen.

Undoubtedly, another circumstance also played a positive role. The party bureau members showed a constant interest in how the men were improving their political and technical knowledge and how leisure time activities were carried out. The activists were concerned with how the chief of the group organized the socialist competition and established his relationships with subordinates. They shared their own experience with Nakoryakov and told about the achievements of the advanced men in the squadron.

In particular, the bureau member, Sr Lt Tech Serv N. Zubarev, helped Nakoryakov draw up flow sheets for readying the aviation equipment for the flights considering the work of an undermanned group. Upon the advice of the activists, the commander recommended that the pilots more specifically assess the operation of the aviation equipment in the air for the purpose of improving the quality of inspections prior

to the flights and taking prompt measures to detect and eliminate shortcomings. At the party bureau there was a serious talk also with communist Khudnev. They demanded that he go more deeply into the affairs of the subordinate collectives, more efficiently direct the officers and provide them with constant help and support.

The individual talks became an integral part of the work of the party organization, but their effectiveness was high only in the instance when each talk was carefully prepared for and the questions which were to be discussed were thought out ahead of time.

The Decree of the CPSU Central Committee "On Further Improving Ideological and Political Indoctrination Work" points out that the primary party organizations should become a center for daily ideological indoctrination activities, they should unify the collective and skillfully carry out individual work.

Practice has shown that individual talks with the aviators helps to strengthen party discipline, to raise the leading role of the communists and their responsibility for flight safety, for strict and unswerving observance of the documents regulating flying. Life has substantiated the effectiveness of this work with the communists.

Let me give one other example. In the squadron there is a Maj V. Davydov, an experienced air fighter, a skillful pedagogue and indoctrinator, and a flight instructor for all weather conditions. He has due authority among the personnel. But once in working on gunnery training, Davydov made a mistake which almost entailed undesirable consequences. He pulled the fighter out of the dive at an altitude below that provided in the mission.

In the analysis it was discovered that Davydov had overestimated his capabilities. And this was pointed out to him, having reminded him that an experienced pilot must prepare carefully for each flight mission. Communist Davydov drew the correct conclusions. Now he is the deputy squadron commander, he flies boldly and confidently, and teaches the young to unswervingly observe the requirements of the documents which regulate flying.

Of course it must not be concluded that all the work of the communists in the area of flight safety comes down to individual talks. In the given instance it is merely a question of them as just one of the forms of party political work. The questions of the indoctrination of the aviators are analyzed in detail at the meetings, they are discussed at the party and Komsomol conferences, and are constantly at the center of attention of the commander and the party bureau.

Considering the experience of previous years, when certain young fliers after their first successes were inclined to overestimate their forces, the party bureau at one of its sessions along with the commanders discussed the question of strengthening control over flight preparations by the young pilots. The communists described how to better organize the help to the flight commanders in working with the lieutenants and of the necessity of responding promptly and quickly to any infractions.

For example, take the young fliers V. Trifonov, Yu. Lun'shin and S. Shutov. At one time they did not show any interest in social life, and were not always willing to carry out assignments. Upon the decision of the party bureau, communists L. Kulagin

and V. Bulgakov talked with the lieutenants, they reminded them of the qualities which modern air fighters should possess, and took an interest in their successes in Marxist-Leninist study. The young officers felt the close attention of the communists and began to prepare more seriously for the flights. Their activities in the social life of the subunit also increased.

Inspired by the decisions of the November (1979) Plenum of the CPSU Central Committee and the 2d Session of the USSR Supreme Soviet, the communists and all the personnel of our air squadron are fully determined in the concluding year of the Tenth Five-Year Plan, the year of the 110th anniversary of the birthday of V. I. Lenin and the 35th anniversary of the victory in the Great Patriotic War, to achieve new successes in combat training. The aviators set new high goals in improving flight skills and in organizing flights without flight accidents or potential ones.

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## EFFORTS TO RAISE COMBAT READINESS DESCRIBED

Moscow AVIATSIYA I KOSMONAVTIKA in Russian No 3, 1980 p 16

[Article by Lt Col Yu. Germashov: "Not Caught By Surprise"]

[Text] The signal notifying the start of a practical flight exercise sounded unexpectedly. However, the aviators in the flight under the command of military pilot 1st class, Capt V. Smirnov, were not caught unprepared. In a few minutes the combat aircraft were already in the air. Each of the scouts headed precisely to the designated area and successfully carried out the flight mission.

In summing up the results of the tactical exercise, the squadron commander commented on the precise and smooth actions of the personnel in this flight. When communist Smirnov was asked what he saw as the guarantee for success, he replied:

"In everything the basis is a high feeling of responsibility on the part of each man for the cause of the collective. And, of course, there is the example set by the communists. They are our vanguard."

The commander said the last phrase with pride. And he had reason for this. Just take this exercise. The aviators had prepared seriously for it. And the communists set the tone in the preparations.

I remember the flight party meeting held on the eve of the exercise. The speakers said that one could be proud of high points if the aviators could reaffirm this in any, even the worst weather conditions. True words! The decision approved by the communists was good and to-the-point.

Success did not come all at once. It was preceded by painstaking indoctrinal work with the personnel. And while previously there were instances of an infraction of military discipline, at present there are none.

"A good example is set by the commander," said the flight party group organizer, military pilot 2d class, Sr Lt M. Yundin. "Communist Smirnov is the secretary of the squadron party organization and has great authority among his fellow servicemen."

In actuality Capt Smirnov possesses many qualities of a modern leader which were described at the 25th Party Congress by the General Secretary of the CPSU Central Committee, Comrade L. I. Brezhnev. Disciplined, demanding on himself and

subordinates, Smirnov has profound ideological and theoretical training, he is well prepared in professional terms, and excels in high party principledness. In organizing the combat training of the aviators, the flight commander skillfully combines exactingness and irreconcilability for shortcomings with confidence and respect for the men and concern for them. And he has achieved from his subordinates a similar attitude toward service and the carrying out of duties.

It is rightly said that as goes the commander so go his subordinates. In the flight there are many pilots, technicians and mechanics who carry out the most diverse social assignments. The party organization is headed by M. Yundin, the Komsomol one by the military pilot 1st class, Sr Lt Yu. Glukhov. They are helped by the activists, officers V. Brandt and V. Kostetskiy, the aviation specialist Jr Sgt S. Lelyukh, and others.

In a word, in the flight by the efforts of the communist a close, united collective has been forged where comradely mutual aid and teamwork are the underlying principles.

Here are several examples. Once Pvt V. Mel' nichuk, a member of the commander's crew, violated military discipline and was strictly punished for this. Smirnov had talked patiently with him many times, asking about his home life, his family, and with each talk learned more and more about his subordinate. It turned out that the soldier had received an unpleasant letter and pulled into himself. Gradually the commander, as they say, was able to find the key to him.

Soon Smirnov noticed a change in Mel' nichuk's mood. Then the mechanic requested leave.

"Has he let us down?" doubted the squadron commander.

"No," Smirnov answered firmly and supported his subordinate.

The flight commander's confidence was justified. Subsequently Mel' nichuk became a disciplined and efficient fighter and a skilled aviation specialist. The Komsomol member elected him a member of the squadron Komsomol bureau.

Another example. In preparing for the exercise we have already mentioned, the flight commander, along with the party group organizer, analyzed the socialist obligations approved by the aviators. Their attention was struck by one of the points in the obligations of Sr Lt V. Brandt which was to make all landings with an evaluation of "excellent." But not so long ago this pilot had landed his fighter roughly. And although Brandt's mistake had been carefully analyzed and they helped the pilot get rid of it, still Capt Smirnov was concerned.

"Isn't Brandt overestimating his forces? There is time, I will make a flight with him...."

"It would not hurt to remind the other aviators again of their personal responsibility for the forthcoming exercise," said Yundin supporting the commander. "I intend to speak about this at a group party meeting."

The flight commander again analyzed in detail with the pilots all the mistakes which they had made in the previous flights, and reminded them of the importance of the forthcoming exercise. He worked additionally on the trainer with Brandt and the other aviators, and flew with them in their planes.

During this period the party activists headed by the party group organizer had a brief talk with each pilot, technician and aviation specialist, emphasizing that one of the important components for success during the period of the crucial flights was teamwork in actions. Special issues of the photonewspaper and combat leaflet were devoted to the preparations for the exercise. In particular, they took up the socialist obligations assumed by the flight aviators.

Incidentally, this collective is characterized by high competitiveness and by a passionate desire of the competitors to win over a rival. As an example take the same Brandt. On the eve of the exercise, he challenged Yundin to a competition.

"I want to prove that I am ready to successfully carry out any element of the flight," he told the party group organizer."

"Well, that is praiseworthy," said the flight commander who was present at the conversation, smiling. "Although I will tell you beforehand, you have a difficult task."

Brandt proved his high professional training, during the flights he acted precisely and energetically, he sought out the objectives quickly, informing the ground promptly and properly of their coordinates. As a result he merited the thanks of the senior chief.

Competing equally effective in the exercise were the other aviators of the flight, for example, the pilots, Sr Lts V. Polivanov and V. Pal'chinskiy, the aircraft technicians Lts Tech Serv V. Lagoda and A. Lyasotskiy, the aviation specialists Jr Sgt S. Lelyukh and Pvt E. Mamanazarov.

By their personal example the communists inspired their comrades to carry out the missions confronting the subunit on a high level. In the course of the combat training sorties, the results of the socialist competition were effectively used in individual talks and were shown in the visual agitation. Special issues of the radio news and express leaflets were devoted to the advanced men.

The flight for several years now running has kept the title of outstanding, and here there are no laggards. The aviators are steadily improving their combat skills, bettering their air abilities, making a worthy contribution to further strengthening the combat readiness of the unit. They are doing everything so that no surprise catches them unaware. The close combat collective, upon the first signal, is ready to carry out any mission confronting them. The party political work carried out by the communists in the flight helps to indoctrinate such readiness.

The organizational abilities and the experience of the party political work carried out by the flight commander have been given their due. Recently Capt Smirnov was appointed the deputy squadron commander for political affairs. As before he is devoting all his strength and energy to the struggle for high quality military and political training.

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## TRAINING MARCH OF AIR SUPPORT MOTOR UNIT DESCRIBED

Moscow AVIATSIYA I KOSMONAVTIKA in Russian No 3, 1980 p 17

[Article by Sr Lt P. Kochnev: "Through Blizzard and Fog"]

[Text] In the course of the tactical flight exercise, the motor transport company under the command of Sr Lt I. Pen'kov was ordered to rapidly deliver fuel, supplies and food to another airfield. Little time was allocated for preparing for a long many-kilometer march. But it was enough for the motor vehicle troops. The column left the vehicle park at the established time.

Initially the vehicles traveled over a paved road, precisely observing the speed and distance between vehicles. Already scores of kilometers had been covered. But then the column turned off onto a field road. And then the weather took a final turn for the worse. Even in a clear windless day, it is not easy to drive a vehicle over a road which is full of unexpected turns, steep ascents and long grades. But in bad weather it is even more complicated.

But the commander was confident that the motor vehicle troops would successfully carry out the given mission. He knew his drivers well as well as the level of each man's skills. Pen'kov could imagine how with a firm grip on the wheel and watching the road closely, Pfc V. Kretts would drive his truck. Behind him, keeping strict distance, followed Jr Sft Yu. Sklyarenko and his subordinates. The officer was concerned for the young specialist.

But in the subunit everything had been done so that the young soldiers as quickly and well as possible could master driving under adverse conditions. Here they regularly exchanges advanced experience. The Komsomol activists with their leader Lt V. Khalimonov, upon the instructions of the commander, organized help for the drivers. Positive results had also come from the exercises in the technical group under the leadership of the deputy commander for technical affairs, Sr Lt N. Safonov.

But basic attention had been given to the actual instructing of the drivers. They trained with great intensity. Exercises were held in a special classroom as well as on the terrain with various road surfaces. With good reason this subunit which for several years running has kept the title of outstanding is among the right-flankers in the socialist competition which has developed in honor of the 110th anniversary of the birthday of V. I. Lenin. In recent years here there has not been a single potential transport accident. And during this training year, the personnel has undertaken everything to fully carry out the high socialist pledges.

A majority of officers in the company are specialists 1st and 2d class and skilled pedagogues. Planned exercises are conducted in the subunit regularly, on a high level and effectively. As a result 100-percent interchangeability has been achieved. And due to precise operations and a careful attitude toward the equipment, there has been a significant increase in the run of the vehicles between overhauls. The drivers struggle decisively to save fuel and lubricants. For example, in just 6 months they saved several hundred kilograms of fuels and lubricants.

Combat traditions play a major role in the indoctrination of the motor vehicle troops. Sr Lt N. Safonov and the commander of the outstanding platoon, Lt A. Tsyplakov, are loyal to the cause of their fathers. During the difficult time for the nation, their parents were on the forward edge of battle and spared no energy for victory over the enemy. During all 4 years of the war, the father of I. Pen'kov was a frontline driver.

...The engines roared under the effort. Ahead were the most difficult kilometers. And there, at the airfield, there would not be even a minute for resting. They had to quickly prepare for receiving and servicing the winged combat aircraft.

It is a tradition for the personnel in the company to precisely service the flights and obtain high points for each flight shift. For this reason in the analysis of the exercise with good reason the subunit of Sr Lt I. Pen'kov was named, as it had successfully carried out a difficult march and had fulfilled the set combat training missions with a grade of "excellent."

Of course, a good deal had been done. But the men were fully aware that not all reserves as yet were in action. For this reason, during the course of intense winter training they would endeavor to take new heights in combat improvement.

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## TRAINING FACTORS IN SUCCESSFUL MISSILE LAUNCHES DISCUSSED

Moscow AVIATSIYA I KOSMONAVTIKA in Russian No 3, 1980 pp 26-27

[Article by Lt Col A. Sinikov, Military Sniper Pilot: "A Sure Interception"]

[Text] The personnel of the unit were working at an unfamiliar range. At the set time radio-controlled targets were released into the skies. One after another fighters took off to intercept them.

On the combat course was the two-plane element of Lt Col A. Zhavoronkov. The blip from the target was on the sight screen. And although the "enemy" was maneuvering, the leader had created all the conditions for a sure intercept.

Closing in. Launch! The target was destroyed with the first missile.

The other pilots performed successfully over the range. As a result the regiment received a high grade for the missile launches. But also there were mistakes.

Thus, Capt A. Yegorov was unable to attack his target. The navigator made great errors in bringing the pilot to the target. However the pilot did have an opportunity to attack the target. But the captain made a hurried decision, he responded feebly to the commands from the ground, and was taken out of the attack.

What factors determine the successful carrying out of a gunnary mission? It could be answered: the same which influence any flight. But this would not be a complete answer. It does not consider the specific features in actual missile launches.

An analysis of the flights to fire at airborne targets and the questioning of several groups of highly competent experts made it possible to isolate the basic factors and rank them in order of significance: a knowledge of the sight equipment and weapons of the aircraft and the ability to operate them; the quality of individual piloting techniques; the preparatory exercises in terms of the firing mission; preparations on the ground for the specific combat flight; the volitional preparedness of the pilot; his physical state; emotional and mental stability. Let us examine these factors in greater detail.

The greater complicating of aviation equipment is an objective pattern. The saturating of aircraft cockpits with various equipment has reduced the time for controlling it by many-fold. Moreover, the multiplicity of variations for the combat mounting require selectivity and accuracy of actions in operating the sight systems and good

training in controlling the levers, buttons and switches. For the complete and effective use of the combat capabilities of the weapons, the fighter pilot should have a clear understanding of the operating principles of the sighting and weapons systems in all their modes, firmly know all types of readings on the sight systems as well as the position and purpose of the controls in the aircraft cockpit.

The basic task of a pilot in a combat mission is to bring the aircraft into the area of possible missile launches (firing). Depending upon the parameters of the flight of the target and the aircraft, even for the same type of weapons this area can vary widely, and in certain instances can be extremely restricted. This complicates the carrying out of the combat mission. At the same time, within the given area the conditions for employing the weapons vary, and at its different points the probability of hitting the target differs.

Thus, within the missile launch range, there is an optimum range which ensures the maximum probability of hitting the target. The ability to bring the combat aircraft into the area of a possible launch to the point with optimum parameters for the use of the weapon also characterizes true expertise on the part of a pilot.

Modern aircraft are equipped with advanced sight systems and powerful weapons with great capabilities. Guidance is facilitated by using various methods. However, the pilots as before consider the quality of individual piloting techniques to be one of the main factors of success in a combat flight.

At first glance everything appears clear in the preliminary preparations for firing: the more flights a pilot has made for the corresponding preparatory exercises the better. The minimum necessary number of them has been determined by the corresponding documents. However, there is also an optimum number of such flights and this is determined for each pilot in accord with his individual qualities, flight skills and experience in previous firings. It is desirable that these flights be made under conditions which are as close as possible to range ones.

The training of the pilot on the ground usually is carried out on the eve of the firing under the leadership of experienced instructors. The content is strictly defined. This is comprised of the setting of the mission for the flights, for independent preparations, training sessions and inspecting of readiness for combat firing. However, under range conditions these elements have essential features which must be carefully studied, in constantly remembering the safety measures. The quality of preparations for combat firing consists in this.

A pilot who is ideologically and physically strong, who has mastered the combat equipment, has great advantages in air combat. Certainly, training combat even with the use of combat weapons, differs from the real in a number of conditions, the main one being the absence of any active enemy resistance. However, in firing at an air target, a will for victory, tenacity, discipline and restraint play an important role. All these qualities are indoctrinated in the course of daily military and political training and are carried out at the range.

The standard demands on a pilot's health are well known. It is also known that there is a rather broad gradation for the concept of "standard" in terms of individual characteristics of the state of health. With other conditions being equal, both the overall physical development of a pilot as well as the completeness of his

preflight rest are of crucial significance for successfully carrying out the flight mission.

Flights involving real launches are conducted under conditions which differ significantly from those under which the pilot usually flies (a different airfield, an unfamiliar flight zone, a great "grade burden" to carry out the exercise in the course of the tactical flight exercise, and safety measures). This inevitably gives rise to a definite emotional background which has an impact on the outcome of the flight. Naturally, the higher the emotional and mental strength of a pilot the less he is affected by the unusual range conditions. Emotional and mental stability are a complex factor which depends upon a number of other ones which determine the preparation of the pilot for field firing. But the concealing of this factor, among other ones, has obviously led to its comparatively low regard by expert fliers. At the same time its affect on the result of the flight is very significant.

Experience has shown that before a firing flight, inevitably there is a state of combat excitement which mobilizes the flier to carry out the set mission. But excessive excitement can lead to hurry, to omitting individual operations, and sometimes an inhibition of routine activities as was the case in Capt Yegorov.

From the viewpoint of psychology, it is not accidental that a training interception and an interception with the launching of combat missiles are completely different things, although structurally they differ insignificantly. It is important that the pilot be psychologically ready for the real use of the weapons.

We have briefly analyzed the content of a combat flight and the factors determining its result. We feel that this will help the commanders in correctly organizing the preparation of the air fighters to fire at air targets, as well as to work out a precise plan of measures considering the importance of these factors.

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## WIDER USE OF TECHNICAL INNOVATIONS IN AIRCRAFT MAINTENANCE NOTED

**Moscow AVIATSIYA I KOSMONAVTIKA** in Russian No 3, 1980 pp 38-39

[Article by Engr-Maj A. Kul'shin: "The Classroom Is Not an Exhibition of Innovations"]

[Text] Our training building is directly next to the airfield, close to the helicopter parking areas. And the leaders of the IAS [aviation engineer service] use each free minute for conducting exercises with the technicians and mechanics in their specialties and for developing the skills of operating aviation equipment.

It must be pointed out that the equipment of the classrooms and the diverse trainer facilities make it possible for the personnel with maximum efficiency to use the time allocated for study. The pilots and the IAS specialists here reinforce their knowledge of the equipment, they study more profoundly its combat capabilities, they train in executing the elements of preparing the helicopters for flights, and learn to operate the equipment and weapons of the rotorcraft under special flight conditions. In the classrooms for the various specialties, the aviators can find information on the most diverse operational questions.

Many officers, warrant officers ("praporshchik"), sergeants and soldiers are involved in improving the training facilities. For example, Engr-Maj L. Kulikov, Engr-Capts V. Ukhov and V. Chirkov, WOs V. Gusev and N. Tunguskov, and other specialists have developed and made stands, working models and trainers. In one year alone, they completely redid the training classrooms and created new aids. Thus, the volunteer innovators made original structural diagrams for the operation of each system. The units in them are shown in cross-section, and this makes it possible to gain the greatest clarity in studying the design and operation of the assemblies, various communications lines, and to more profoundly master the technical specifications of the systems, and the procedure for checking them out on the ground and for operating them in the air.

Let us glance into the helicopter classrooms. Attention is drawn to the real rotorcraft cockpit, where they have equipped not only the work areas of the pilots and the flight engineer, but also have completely simulated the stress on the controls. Moreover, the trainees have an opportunity with the instrument panels and boards to trace the behavior of a helicopter in various situations. The instructor, in introducing a special case during the training, can determine how effectively his subordinate would act in a critical moment. If he has incorrectly executed any element, for example, made a mistake in operating the cockpit equipment, the leader

of the exercise, in trying to save training time, proposes that the trainee do further training on one of the electrified stands. They have descriptions of the systems and coded tables with a range of buttons.

As an example, one needs to study the functional system and operation of a fuel system. By pushing a button, the operator starts up the program device located on the face panel. In sequence display panels come on describing the parameters, and on the display the operational and adjustment points are illuminated, the procedure for using the tanks, and the sequence of operations which must be performed by the specialists in one or another type of ground preparations, and the particular features of operating the system under low-temperature conditions. And what is particularly important in our view, the bottlenecks are indicated where previously failures were encountered.

After the trainee has reported that he has mastered the material, the leader re-trains him in the trainer cockpit, and then tests his knowledge using an electric test device.

Each classroom has such instruments. In design terms, they have been made differently. On a small-sized panel, usually, not more than 50 x 50 cm, are located code devices in the form of tables or a telephone dial. The test card contains 5 questions and 25 different answers which the instructor codes in the order required by him using a changeable plate. In the "examiner--recorder" training mode, using control lights, it shows whether or not the trainee has answered the question correctly. The transition from mode to mode is carried out by the "instruct--monitor" switch. Answers are fed in by using a unit of button switches.

There is also a system which excludes the possibility of guessing the correct answer or pushing the buttons one by one as the panel lights up with "guess" and a signal sounds. After answering the questions, the testee pushes the button "grade," and on the panel a figure is shown corresponding to the number of correct answers.

The equipment makes it possible for the young technicians and mechanics to train during the early training period, as well as recover habits lost as a result of an interruption in work. Here there are training sessions for a specific type of preparing aviation equipment for flights or for carrying out repairs, and also for preventing major mistakes by the IAS specialists which occurred in other units (from the materials of information bulletins). The exercise in assembling hydraulic boosters, servicing the antiicing system, and so forth can serve as an example of such training.

The questions of improving the effectiveness of the exercises and making maximum use of the training facilities are systematically discussed at the sessions of our scientific and technical section in the unit's educational methods council. Thus, upon its proposal, several groups of specialist inventors were organized for each specialty. Their functions included not only the development and manufacturing of visual aids, but also an analysis of the use of the training facilities.

In particular, specialists from the group headed by Engr-Capt S. Nikonov established that in a sectioned motor (plant-made), the remote points of the manifolds were located in a position not convenient for inspection. The rationalizers found a way out of the situation by mirroring the space underneath the engine. Now the

instructor, in explaining the theoretical material, has an opportunity to show the trainees any distant point.

Or another example. The subordinates of Engr-Maj V. Cherkay during their exercises to perform repairs on the main gearbox, the tail boom and other helicopter assemblies previously could only hypothetically describe how they planned to stuff the lubricating nipples, change filter elements, measure parameters and perform adjustments. This did not make it possible to achieve the greatest effectiveness in the time allocated for training.

Then they decided to instruct the rationalizers in one of the production areas to assemble a trainer which would include certain vitally important helicopter assemblies. Now the young technicians and mechanics upon arriving in the unit study the position of the manifolds and units using this. And in the course of practical exercises they can perform any operation by analogy with real adjustments.

The exercises and training are carried out according to previously approved plans. At the same time the engineers pay much attention to propagandizing military technical knowledge in extracurricular time.

In planning the measures consideration is given to all categories of personnel, the length of service and the skills of the specialists, and their ability to carry out the given tasks in a certain period of instruction. The regiment's engineers pay attention to the concreteness, accessibility, instructiveness and effectiveness of the planned measures.

What are these forms of instruction?

Various lecture series have proved effective. The engineers and political workers conduct the exercises during them. In a popular form they describe to the aviators the achievements of domestic aviation building and the discoveries in the area of science and technology. This helps to broaden the viewpoint of the specialists and raises their interest in their profession. In the squadrons extensive use is made of seminars at which the officers report on how they are studying the equipment. In this instance the audience acts both as an arbiter and as an active participant in discussing one or another question.

Previously we have successfully used technical evenings and contests at which the mechanics competed. Unfortunately, last year these forms of instruction and the propagandizing of scientific and technical knowledge for some reason were little used. At the section of the educational methods council, this year we decided to come back to them.

In improving the skills of specialists and in successfully preparing them to pass the exams for a class rating, an important role is also played by the technical circles, the competitions for the best squadron specialist and the evenings of class specialists. The leading aviators share their experience, and in demonstration exercises show their procedures and methods for operating the complicated equipment.

The technical analyses for various periods of combat training also have a positive effect upon improving the quality of personnel training. As a rule, we endeavor to conduct them in the training building so when necessary the IAS leaders can

illustrate one or another concept in front of the stands and models. Here the experienced pedagogues such as officers V. Fadeyev, L. Kulikov and others not only analyze the detected flaws and malfunctions, and give recommendations to prevent them, but also skillfully propagandize the experience of the best flight engineers who in an exemplary manner organize their training and work. In particular, the experience of Capt G. Petrov who is leading in the competition between the specialists has been widely spread.

At sessions of the engineering-technical session of the unit educational methods council, we regularly discuss the course of training for the IAS leadership which is responsible for the skills of the technicians and mechanics. This is done in order that the inspectors themselves are well trained, have a perfect knowledge of the designs of the assemblies, units, equipment systems and the technology for carrying out all the jobs and meeting the technical conditions.

Recently, for example, the unit held assemblies for the group chiefs and the chiefs of the maintenance units of the flights. The officers demonstrated how they are able to use the monitoring and check-out equipment and the meters, and from the indirect indications determine the possibility of a potential flight accident and prevent it. Such assemblies are conducted twice a year in the unit. This helps the IAS leaders maintain their skills on a high level, skillfully indoctrinate and train the personnel of the IAS and efficiently employ each minute of training time.

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## PEDAGOGICAL ABILITIES OF FLIGHT INSTRUCTORS REVIEWED

Moscow AVIATSIYA I KOSMONAVTIKA in Russian No 3, 1980 pp 42-43

[Article by Col A. Yena: "If You See a Mistake..."]

[Text] Training is a two-sided process, the results of which depend upon the pedagogue-instructor and upon the student. But here the main role is played by the teacher, or in a check-out or introductory flight by the instructor. With good reason all the documents which regulate flying emphasize that he is responsible for the safe outcome of the flight. We feel that this provision would be very well complemented by the words: and is responsible for the quality of pilot instruction and for the effective use of each minute of an introductory or check-out flight.

As is known, in order to more successfully carry out his duties, even before the moment when he takes to the air in a two-man trainer, the instructor should have a good knowledge of his student. Individual commanders assume that acquaintance with the lieutenants of necessity must start with the personal files. We feel this is not quite the case as life can also make corrections.

In the regiment where I have served for a long time, school graduates were arriving. It was essential, without wasting a single day, to introduce them to the new aircraft. At the established time, exercises for ground training were started. Then the pilots took the exams. They began to fly. But we still did not have their personal files. However this was no problem. In observing the lieutenants, in talking with them in studying theory, and in analyzing the first executed missions, we quickly gained a sufficiently accurate opinion of each of them, their capabilities, their strong and weak points. And when the personal files arrived and they were carefully studied, it turned out that our data on the young pilots differed little from the recommendations which had been written about them at school.

Consequently, without even having available detailed information, it is possible to have a good knowledge of an officer at the beginning of his service during exercises and flights. And in studying the personal file, the instructor must consider the following detail. In arriving in a unit, a lieutenant enters a new situation. The collective, as a rule, has a positive effect on him. A person also changes with age. This is why, along with the entries in the personal file, it is essential to consider the specific deeds of each pilot and his attitude toward service.

Naturally the commander must pay particular attention to the flight training and spot weak points ahead of time. Sometimes from young pilots one can hear: "During

the flight the stick and the pedals were like they were jammed." This meant that the instructor was holding onto the controls so much that any attempt by the student to act independently or show initiative was excluded. It goes without saying that the benefit from such an introductory or check-out flight would be extremely slight. Certainly excessive interference teaches the pilot to wait for suggestions from the rear cockpit that he is doing something wrong and is not trusted.

And how should an instructor proceed if he sees the start of a mistake? Should he not intervene into the exercise? Undoubtedly he should. Otherwise a major mistake is possible. Experienced mentors of the youth, among whom I would mention the military pilots 1st class Lt Col A. Nebogatikov and Maj V. Vinokurov, during the process of the entire flight do not let the aircraft controls out of their hands, not permitting the trainee to go beyond the limits of a satisfactory grade. But they do this in such a manner that the pilot does not notice their interference in the controls. Experienced pedagogues rightly consider the aircraft intercom as an excellent means of preventing shortcomings. During an introductory or check-out flight the instructor almost always has time to point to a mistake by radio. And if this command is not fulfilled, he takes over the controls. When there are no substantial errors, the instructor is silent, accumulating data for the post-flight analysis.

Very characteristic from this point is the check-out flight under instrument weather conditions carried out by me at one time with the military pilot 1st class, Officer V. Shulakov. The instructor was silent from the starting up of the engine until the wheels were up. One thought: "He has decided not to intervene in my actions until I have taxied and taken off. All of this was beneath the clouds. But going into them he will certainly make himself known."

I endeavored to maintain flight conditions precisely. Regardless of this, there still were mistakes. I caught myself noticing some of them late, and hurried to correct them. In descending along the landing course, I felt drops of sweat running across my face.

The distant homing beacon was passed, and the flaps were down. I was trying to watch the behavior of all the instrument arrows. The aircraft came out of the clouds. The airfield appeared right ahead on course. Probably I relaxed too much. And for the first time during the entire flight in the headset I heard the calm voice of Shulakov: "Speed." And at the same time the engine control was moved energetically forward.

We landed normally. After taxiing to the parking area, the instructor in a most detailed manner analyzed my mistakes, and explained what could be the consequence of each of them, particularly the last. To my question of why he did not say a single word in the air, Officer Shulakov replied: "There was no need. The mistakes did not go beyond the established limits."

Subsequently, already flying as an instructor, I often recalled this flight, the high pedagogical skill of the veteran pilot and his ability to go deeply into the psychological state of the trainee.

A few words about the tactfulness of a commander and his restraint. Experience shows that before making a comment to a subordinate after a flight, it is essential to think over well not only what must be said but also how. Certainly the same mistake can be interpreted differently. Here one must not give free rein to one's character or temperament. In truth, some feel that there are people who respond positively to a rise in the tone of voice. I cannot agree with this. A lack of restraint by an instructor always had a negative effect on any trainee. It is a different thing that each person tolerates this in his own way: one takes it to heart, while another may simply wait quietly for the moment when the instructor stops the unpleasant conversation.

A completely different result occurs when the analysis of an introductory or check-out flight is made in a calm, professional tone. The trainee feels that the instructor is respectful of his flight and that he is fully determined to help eliminate mistakes. The young officer endeavors not to miss a single word of the teacher, and after the analysis carefully thinks over the comments.

In an analysis, many commanders draw attention only to the committed errors. But all the good things that the trainee has shown in the air must not be left unnoticed. Even if only a small success was spotted, it is the task of the instructor to develop this. Having noted the positive in the actions of the trainee, the instructor thereby gives him a good impetus for the future.

In check-out flights an instructor must often make comments directly in the air. And some during the entire flight, starting from entering the cockpit and ending with the taxiing of the aircraft to the runway, are continuously explaining something to the trainees. And a larger portion of all that is said has long been known to the subordinate. Moreover, any conversation over the aircraft intercom system distracts a person from piloting the aircraft, that is, from instruction itself.

The quality of each flight to a great degree depends upon mutual trust. Certain pilots endeavor themselves to analyze their errors, and are reticent to ask any superfluous question of the instructor. This shortcoming is inherent to the officer candidates of flight schools as well as graduates when they are first in a line unit, when they feel not completely confident about many questions.

In learning to fly, one must not shut oneself off. The instructor, of course, can notice a mistake, give a correct interpretation of its causes, and demonstrate how it is to be eliminated. But he cannot know where a subordinate has hesitations, what elements of the flight seem the most difficult, which actions are performed automatically in the cockpit, without going into the essence of aerodynamic processes. It is difficult for him to know why today an officer flies worse than yesterday, and why he listens to the comments half-heartedly. And here frankness is required from the trainee. A young pilot needs to be certain that the franker he is with the commander, the more rapidly he will eliminate errors.

During my years of service, I have met many instructors who most valued frankness, here observing definite tact without fail. The relationships of the pilot with the commander when based on confidence, as a rule, produced good results. And conversely, guardedness and the attempt of the trainee to analyze everything himself delay the instruction process and lead to the repetition of mistakes.

In order that each flight on a two-man trainer be effective, an instructor must continuously improve his professional training, study the principles of psychology and pedagogics, and be able to establish good relations with the trainee.

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## FAULTY AIRCRAFT MAINTENANCE PROCEDURES DESCRIBED

Moscow AVIATSIYA I KOSMONAVTIKA in Russian No 3, 1980 p 43

[Article by Guards Engr-Capt V. Orlovskiy: "If the Marks Lined Up"]

[Text] The fighter was taxiing to the runway. Out of habit established over long years, Officer A. Troyan followed his aircraft out of the corner of his eye. Then the pilot put on maximum power, released the brakes, and the aircraft began its take-off run. Seemingly in a few seconds it would be airborne. But all of a sudden the brake parachute door opened and the container fell out on the concrete. Upon the command of the air controller, the pilot aborted the take-off.

At that moment Lt Tech Serv Troyan was at the take-off position and had a good view of what happened. Nothing like this had ever happened before for the leading officer and experienced specialist. "Could that be my fault?" wondered Troyan upset.

Now they had to wait to see what the engineers would say who were engaged in analyzing this incident. They began with a preliminary talk with the pilot. Had he made any mistakes in take-off? No, there were no deviations from the instructions in his actions. This was also affirmed by the instrument monitoring equipment carried on the aircraft. Using a portable monitoring and check-out instrument, the specialists carefully inspected and tested all the units related to the release of the brake parachute, and checked the integrity of the electrical circuits. However at this first stage, regardless of all the attempts, they could not find the cause.

Then the engineers proposed that the aircraft technician slowly carry out the operation of installing the parachute and closing the container, at the same time explaining his actions. If the officer had lost one or another skill, the reason for the hitch could be discovered. But Troyan precisely performed everything required of him.

Seemingly all opportunities of finding the truth had been exhausted. Now the unit had to be taken out of the aircraft and sent for study. But then the engineer, having completed an inspection of the lock of the parachute container door, accidentally tapped the door and it opened. If the aircraft was in motion, the brake parachute would have come out again. The engineer repeated the experiment several times. Sometimes the lock held, but more often it opened.

Before saying what conclusion was reached by the engineers, let me recall one other instance. Once, in an inspection, a crack was discovered on the collar of the

undercarriage leg and which had appeared because the specialists had tightened the nut too much. The inspector was a good psychologist. Having said nothing to the aircraft technician about the crack, the officer demanded that he go through the technique of inspecting the leg and describe what elements he looked at. He confidently listed...the check marks and demonstrated how he looked at them.

"The main thing," said the technician, "is merely that the marks line up. This shows that the collar has been correctly fastened, it has not slipped and the assembly of electric braided cable has not been disturbed.

"And now look here," proposed the engineer.

Perplexion and annoyance instantaneously were reflected on the technician's face: How could I do such a thing.

The cases of the spontaneous release of the brake parachute and the appearance of a crack on the fastening collar are not apparently similar. But the reason for their occurrence is the same. Lt Tech Serv Troyan when closing the lock also could see the line-up of the test marks. But in the process of use, the lines had gradually obliterated. The aircraft technician, in carefully restoring them, selected a width arbitrarily, and made an insignificant change in the size. This was within the limits of not more than 1-1.5 mm. But, in lining up the marks, did not push the final 1-1.5 mm and the lock did not catch. Because of this, even with an insignificant mechanical impact, the lock spontaneously opened.

Hence the paradox. A technician skillfully observes the inspection techniques and at the same time overlooks precisely the reason for the inspection. I feel that here the problem is that in time certain specialists develop stereotypes in performing operations which replace the analysis of the state of the assemblies by inspection only from external appearances. However external appearances alone do not always provide a picture of the true state of the equipment and its complicated systems and units. Hence the errors described above.

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## GREATER ATTENTION TO WORK OF AIR TRAFFIC CONTROLLERS URGED

Moscow AVIATSIYA I KOSMONAVTIKA in Russian No 3, 1980 p 44

[Article by Capt Yu. Andronov: "A Near Miss"]

[Text] In this unit, the officers who are to control and direct the flights undergo careful preparation. Theoretical exercises and training are held with them. Under the supervision of the commander, they develop the necessary skills. Then they train as back-ups, they learn efficient actions in special cases, the analysis of weather and the run-down of errors. And only after completing such exercises are they allowed to work independently. This produces positive results.

Officer V. Vinogradov had often directed the flights. As yet there had been no instance where any failure occurred in his duty. Vinogradov was always intolerant of shortcomings, and demanded unfailing efficiency from the flight crews and the support specialists. He was able to quickly assess the air situation, and possessed great organizational abilities and a firm will. Moreover he had excellent flight training and knew the equipment and controls.

Once Sr Lt G. Dudin in taking off at dusk swerved heavily from the center of the runway. The aircraft's left wheel ran into the dirt and a cloud of dust arose. It was a matter of a fraction of a second, and the flight controller commanded:

"Shut down the engine, release the parachute, put on the brakes."

The aborted take-off ended without the slightest complications.

Officer Vinogradov often reminds the crews of the controller group how important in their work are pedagogical tact and the ability to establish correct relations with the crews. In talks with the pilot, he himself is brief, precise, and is able to create an atmosphere of particular confidence and respect. The essential word of the air controller inspires a crew. And the ground, in turn, also from a pilot's intonation, gains information on his psychological state.

When an air fighter constantly sees in the controller a senior comrade from whom he has nothing to hide, he directly and painlessly reports on his difficulties and doubts. And such confidence tells positively on the course and outcome of a flight and on the development of the pilot.

I recall how the young pilots for the first time were to solo under instrument weather conditions. The flight controller, along with the squadron commander, was checking their readiness. There were no doubts about this.

The day of the flights arrived. Having given the last instructions, the officer took his place in the control tower. Naturally, he wanted very much for everyone to fly. But the weather turned bad and visibility dropped. Having assessed the situation, the controller reached the conclusion that Sr Lt D. Raskopa should not fly. Why? The officer had a good knowledge of the individual features of the young pilot. In the flights he felt somewhat tense, and in the developing situation could become muddled from a lack of experience.

Sr Lt D. Raskopa requested permission to start the engine. The reply could have been: "I forbid your sortie." But the flight controller did not do this. He realized that if he merely prohibited this, it would imply a lack of confidence in the pilot and instill uncertainty in his own forces.

At this time, the commander of the squadron in which Raskopa served was at the runway control point. Lt Col Vinogradov told him: "Call the pilot here."

When Raskopa arrived, he received from the squadron commander a convincing answer why he was not permitted to take off. In his presence the meteorologist on duty reported on a further deterioration in visibility. The crews in the air affirmed this. And although the conditions still corresponded to the training level of the pilot, they could not risk it. By this summons, in knowing the particular features of his subordinate, the flight controller in a tactical manner, without excessive discussion, helped him realize the necessity and advisability of the decision taken.

But it also happens differently. Sometimes, under the conditions of a great psychological stress, the pilots receive sharp words from the ground. Of course, at an airfield and in the air it is not easy to create a situation of even, calm relations with all the aviators, particularly as some of them out of their own insufficient effectiveness are forced to raise their voice, but each air controller should remember the strength of a word. A word can both insult a person and help him.

Of important significance in preparing officers as air and traffic controllers are the following: the organization of labor, rest and meals; the surrounding emotional background; relationships with superiors, comrades in service and the family. In particular, unfortunately, little concern may be shown for the rest of the air controllers who directly control the aircraft in the air. At times they are assigned work which could be successfully handled by other officers. We feel this creates a potential reduction in flight safety. Let me give an example.

The civil air routes ran not far from the airfield. And one time, an insufficiently rested traffic controller, in controlling the flight of a young pilot following a route, fell asleep over his screen. Of course this did not last long, but the time was completely sufficient for a near miss between the military and civilian aircraft. The officer was punished. But it is a great pity that in analyzing the potential air accident, no one was even interested in how rested he was. And on the night before, this same officer was controlling flights which ended at 0100 hours. And at 0600 hours he was back for another shift.

Often in planning a flight day (night), a unit may not consider the human fatigue factor. At the same time, as is known, by the end of a flight shift everyone feels this. Obviously it would be better to plan a minimum of sorties for the last hour, considering the decline in professional efficiency and the psychological tone of those who control and direct the flights.

The work of everyone who is involved in directing and controlling flights is difficult and tense. There are many reserves for preventing errors and potential air accidents in further improving the training of specialists for this work and in establishing proper conditions for their work and rest.

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